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# AN EXPERIMENT IN EDUCATION

ALSO

*THE IDEAS WHICH INSPIRED IT  
AND WERE INSPIRED BY IT*

BY

MARY R. ALLING-ABER

11736



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TO  
PAULINE AGASSIZ SHAW



## PREFACE

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IN August of 1880, during a railway journey, I had some conversation with a stranger on educational topics. Some features of the conversation being reported, they reached one who was sufficiently interested in new things to wish to see any reasonable thing tried, and was able to provide opportunity for the trial.

As without the opportunity I could not have made the experiment, it is with no small degree of gratitude that I ask the reader to give to the maker of the opportunity—Mrs. Pauline Agassiz Shaw—due credit for whatever is helpful in the pages of this book.

Acknowledgment is due also to the teachers who aided in the work, since it was their patient, loyal efforts to give the plan a fair and complete trial—each in the parts assigned to her—that largely contributed to the final results. These teachers were Miss ANNA B. SHIELDON, NINA MOORE, DORA V. WILLIAMS, CLARA F. PALMER, and RACHAEL C. CLARKE.

Whenever, in expressing opinions, I have transcended the limits of the experiment or inferences logically deducible from it, I have been made bold

to do so by the fact that a considerable body of opinion which, prior to the experiment, was theoretical only, was proved practicable or reasonable by the results of the experiment; and, although well aware that to prove one thing does by no means prove another or a different thing, the opinions not proved are so similar in kind and so allied by presumptive reasoning to those that were proved that their inclusion seems justified in a work of this kind.

Prior to the experiment I had ten years of teaching in high and normal schools. From one-half to one third of the time allotted to a subject had been spent in teaching the student how to use his mind, to use books, specimens, etc.; in other words, how to study. This waste was irritating and pitiable in view of the short time allowed to subjects, and I could not be reconciled to the notion that an adult mind must so generally lack power to work economically, trustworthily, and discriminately.

It was these conditions, superinduced on a tendency previously formed—during a course at the Oswego State Normal School—to watch the pupil's mind more than the subject being taught, which forced, at last, a conviction that mind *per se* was not to blame, and that bad mental habits and mental life devoid of habit were legitimate products of our processes of education. There naturally followed some devising of means to lessen the evils, and so grew up a desire to experiment with children.

At the opening of the experiment in 1881, so far



as I know, natural-science studies had not been made an integral part of any primary-school course, and literature and history in such grades were mostly unthought of. Some object-lessons had dealt with natural objects and phenomena, and some stories and poems had been drawn from literature and history; but the uses of these had not been of the sort recommended in this book; science, literature, and history had not been made the chief objects of study in primary nor in the grammar grades. Neither are they so now, but long strides in that direction have been taken in many places; so that all which my experiment was meant to demonstrate as feasible now bids fair to become the common usage in education.

If such usage were established and everywhere accepted as a matter of course, this book would have no excuse for being; but because it is not so, and educational thought is still feeling its way towards the same ends and usages for which my experiment was made, this book is offered with the hope that it may do something to increase the impetus of the present movement.



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AN EXPERIMENT IN EDUCATION

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**Part II**

THE EXPERIMENT



I

IN BOSTON\*

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IN October, 1881, a primary department was added to a private school in Boston, Mass., and the control of it given to me, for the purpose of making an experiment in education. While it was hoped the primary would sustain the usual relation to the higher departments, the proprietor guaranteed freedom of action for three years, and generously furnished the means required. Gratitude is due to others also, especially to the teachers who assisted in some part of the work.

The aim of the experiment was to see if the child may not be introduced at once to the foundations of all learning—the natural and physical sciences, mathematics, literature including language, and history—and at the same time be given a mastery of such elements of reading, writing, and number as usually constitute primary education.

\* Reprinted, by permission, from *The Popular Science Monthly* for January, 1892, where it bore the title "An Experiment in Education."

The experiment began with nine children between the ages of five and a half and seven years. With scales and measuring rod each child was weighed and measured, while such questions were asked as "Have you been weighed before?" "When?" "What did you weigh then?" "How does your weight to-day compare with that?" The shyest children forgot they were at school, and chatted freely while watching and comparing results. By questions as to why a present weight or measure was greater than a former one, the statement "Children grow" was obtained. Questions about the causes of growth led to the statements "Children eat," "Children sleep," "Children play." A question as to whether anything besides children grows started a talk about animals, in which were given the statements "Animals grow," "Animals eat," "Animals sleep," "Animals play." In like manner similar statements about plants were obtained. The children were easily led from thinking of a particular child, animal, or plant to the general conception and the use of the general term. This was the first lesson in natural science.

To recall the first general conception reached in the science lesson a child was asked, "Nina, what did you say children do?" "Children grow," she replied. I said, "I will put upon the blackboard something that means what Nina said," and wrote in Spencerian script, "Children grow." In response to invitation the children eagerly gave the general statements gained in



the science lesson. Each was written upon the board and read by the child who gave it. They were told that what they had said and I had written were sentences. Each child read his own sentence again. This was the first reading lesson.

One by one each child stood by me at the board, repeated his sentence, and watched while it was written. He was then taught to hold a crayon, and left to write his sentence beneath the model. When a first attempt was finished, the sentence was written in a new place, and the child repeated his effort at copying. In this manner each made from one to four efforts, each time telling what his copy meant and what he wished his effort to mean. None of this work was erased before the children had gone. This was the first writing lesson.

The children were led to count their classmates, their sentences on the blackboards, the tables, chairs, and other objects in the school-room. It was found that all could use accurately the terms one, two, three, and four, and the symbols 1, 2, 3, 4 were put on the board as meaning what they said, and their power to connect these symbols with the ideas that they represent was tested in various ways. This was the first number lesson.

The children were shown a magnetic needle, and led to note the direction of its points when at rest, and the terms north and south were given. This was the first geography lesson.

After recess each child read his sentence, wrote it once, and then the subject of the science lesson

was pursued further. After special answers to the question, "What do children eat?" the general statement was obtained, "Children eat plants and animals." Similarly, the children were led to give "Animals eat plants and animals." Then came the question, "What do plants eat?" One suggested the sunshine, another the rain, another the air, others the ground or dirt, for which the term soil was given. It was concluded that rain, air, and sunshine help plants to grow, and that some of their food must come from the soil; and the general statement was given, "Plants get food from the soil." Then I asked, "Where does the soil come from?" Before wonder had given way to opinion I said, "If you bring luncheons and extra wraps to-morrow, we will go to the country and try to find out where the soil comes from." A poem of Longfellow's was read, and the children were dismissed.

On the second morning the children came bounding in before nine o'clock, eager to find and read their sentences, which each did without hesitation; and until nine o'clock they amused themselves finding and reading one another's sentences, teaching and challenging in charming style. A few minutes later we started on our first field lesson in science. An hour's ride in street-cars brought us to the open country. We went into a small field where a ledge of rock presented a bold front. "Children," I said, "an answer to our question is in this field. I wish each of you to find the answer for himself, to speak to no one until he thinks he has found it, and then

to whisper it to me." Soberly they turned away, and I seated myself and waited. One child looked up at the sky, another at the ground, one began to pull over some gravel, another to dig in the soil—most to do some aimless thing because they knew not what to do. After a while some began to climb the ledge and to feel of it. Suddenly one of these darted to me and breathlessly whispered, "I think the soil comes from the rock over there." "Well, don't you tell," I whispered back. The sun climbed higher, but I waited until the last child brought me that whispered reply. Calling them together, I said: "You have all brought me the same answer. Why do you think soil comes from this rock?" They turned to the ledge, picked off the loose exterior, and showed me the same in masses at the base. A hammer was produced, with which they picked away the rock until it became too hard for them to break. I then said, "We see that a kind of soil comes from this rock, but what kind did we come to learn about?" "The soil that plants get food from," they replied. "How do you know that any plants can get food from this soil?" I asked. Instinctively they turned to the cliff; there were grasses and weeds growing in the talus at the base, and in crevices all up its front and sides; these they pulled, and showed me the roots with the rock soil clinging to them. By referring to the work with the hammer and comparing what they picked off with the hard mass underneath, they were led to variously describe the process of passing from rock to soil, and finally the state-

ment was obtained, "Rock decays to make soil." After luncheon and a bit of play, the children were led to speak of rocks and soils seen elsewhere. Telling the children to shut their eyes and try to picture what I said, I told them that the earth is round like a ball, and is a mass of rock with a little soil on the outside of it; that if a giant could take the earth in his hand, he might peel or scrape off the soil as we take a carpet from the floor, only the soil would seem much thinner than the carpet, because the earth is so big. All had travelled in railway trains, and had such impressions of their swiftness that this illustration was used: Suppose we start for the centre of the earth on a train. Travelling day and night, it would take nearly a week to reach the centre, and another week from there to the surface again; and all day while we watched, and all night while we slept, we should be rushing through the rock; and if we came out through the thickest layer of soil, it would take but a few seconds to pass through it. Then, telling them to open their eyes, I took a peach whose rind was thin and peeled smoothly from the pulp, spoke of the giant as I drew off the rind, and told them that the soil is thinner on the rock ball of earth than that rind on the peach. A few remaining minutes were spent in observing some pine-trees and barberry bushes growing near.

On the third day, after reading the sentences already on the board—of which each child besides his own read one or more others—the following sentences were easily elicited: "Children

eat plants and animals. Animals eat plants and animals. Plants get food from the soil. The soil comes from the rock. Rock decays to make soil." These were written on the blackboard, read, and copied by the children as on the first day. This was the natural science, reading, and writing of the third day. In number, the children added and subtracted ones by making groups and joining and leaving one another. In geography the first lesson was recalled, and the terms east and west associated with the appropriate points.

On the fourth day, after the children had retold what they had learned in the science lessons, they were shown a globe, and asked to imagine one as large as the room would hold, and how, to represent the earth, they must think it all rock, with only a thin layer of dust to represent the soil. In geography they were shown a map of the school-room, and led to see its relations to the room, and the relative positions of objects in the room and on the map. The next day, on another map, they traced their route to the country, and located the field and ledge of rock where their question was answered. In the fifth day's science lesson the children were led to speak of rain and wind as washing and blowing off the decayed rock and exposing fresh surfaces, and so increasing the decay, and to give the following summary: "Without decay of rock there would be no soil; if no soil, no plants, no animals, no people." In reading they had seventeen sentences, which they read without hesitation and wrote with some resemblance to the originals. In number, none failed

to count to ten and to add and subtract ones to ten. Each day a passage of poetry was read at the opening and closing of the session; little songs were taught, gentle gymnastic exercises were introduced between the lessons, and the free-arm movement in making long straight lines was added to their lessons in writing. This work of the first week is given to show how the experiment was begun. The classes entering the second and third years were started with different sets of lessons, but substantially on the same lines.

Throughout the three years reading was taught as in the first week. When there were enough sentences to make a four-page leaflet of print, they were printed and read in that form. The first transfer from script to print was made at the end of six weeks. The printed leaflets were distributed; the children merely glanced at them; as yet they were of less interest than the objects usually distributed. I said, "Look at the papers; see if there is anything on them that you have seen before." Soon one hand was raised, then another, and another. "Rosamond, what have you found?" "I think one of my sentences is here, but it don't look just like the one on the board." In less than ten minutes, by comparison of script and print, they read the whole leaflet, each pointing out "my sentences." After a few readings the children took the leaflets home, the sentences were erased from the boards, and the same process repeated with the new matter that was accumulating. The reader may think there was great waste of time and effort, since the new

vocabulary and the written and printed symbols must have been forgotten almost as soon as learned. I expected the children to forget much, and was surprised to find that they did not. One morning in March a visitor who was looking over the accumulated leaflets asked to have them read. I told her they had been read when first printed only; but she urged the test, so I distributed them as they happened to come. The first leaflet fell to the youngest girl, and I think I was more amazed than our visitor when she read it without faltering. The visitor asked her, "What does palmately-veined mean, where you read 'The leaf of the cotton-plant is palmately-veined'?" The child replied, "I can show what it means better than I can tell it." "Show us, then, Marjorie," I said. The child drew on the board a fairly correct outline of a cotton-plant leaf, inserted its palmate veining, and turning to the visitor pointed to that veining. All the leaflets were read without help, nothing was forgotten, neither ideas nor words, as the visitor assured herself by questions.

No effort was made to use a special vocabulary, to repeat words, to avoid scientific terms; there was no drill in phonics or spelling; no attention was given to isolated words as words—a thought was the unit and basis of expression. In the science lessons the minds of the children were intent on the getting of ideas and the expression of them. Direction to look or think again usually sufficed to change vague, wordy expressions into clear, terse ones by giving the child clear and accurate conceptions. When the child's own vo-



cabulary was exhausted, he was promptly helped to words by classmates or teacher, the effort being to use the speech of cultivated people.

At first the reading could by no means keep pace with the science lessons: from the mass of expressions obtained some were selected for the reading and writing matter. With increase of power to remember forms and combinations of letters and words, the number of sentences was increased, until what was gained in the science lessons was reproduced in the reading lessons. This increase was rapid. From the first field lesson two sentences—eleven words—only could be taken, while a field lesson near the close of the second year yielded ninety-seven sentences—over eleven hundred words. In the former the sentences were written on the board and read every day for five weeks; in the latter they were taken down in pencil by the teacher as the children gave them, arranged according to topics, printed, and presented in the printed form for the first reading. There was little hesitation in that reading, so vivid were the impressions from such a day out-of-doors.

During the first year a little reading matter was drawn from lessons in literature and history. This was gradually increased during the second and third years. Still the sentences for reading were taken chiefly from the science lessons, because there could be more certainty of the child's having accurate and well-defined ideas as the basis of each expression, and the sentences could be more completely his own. In March of the



first year reading-books were introduced. At the first trial they took Swinton's *Easy Steps for Little Feet*, and in twelve minutes read a page-and-a-half story. Of their own accord they sought and independently obtained from the context the meaning of all but two of the unfamiliar words, and gave to express the meanings either the exact words of the book or synonymous ones, for which those of the book were substituted. After this they read from books whenever such reading could be related to their other work—not much otherwise. While the production by the children of the bulk of their reading matter was a prominent feature, this was not the object of the experiment, but merely an adjunct to the chief end in view. Nor were the science topics selected with reference to the reading matter, but on their own merits, mutual relations, and the capacities of the children.

As soon as a child's writing on the blackboard could be read by his classmates—copy being erased—he began to write at his desk with pencil on unruled paper, the copy being still written on the board. When all had reached this stage, concert arm and finger movements were taught. During the second and third years the forms of the letters and combining strokes were analyzed, and each drawn on a large scale to accurate measurements.

The children saw no misspelled words, and were not asked to spell or write isolated words. During the first and second years they usually had a copy from which they wrote. In the third year

they wrote original exercises. They were told to ask, when not sure how to write a word. The word was written on the board: no effort was made to have them think how a word should look, no matter how many times they had seen it written and printed.

Work in the natural and physical sciences, starting with broad conceptions, was carried forward along various lines, care being taken to show relations, and to lead the children to regard themselves as a part of nature. In mineralogy and geology, the paving, building, and ornamental stones most used in Boston; the ores of the principal metals, and their products; graphite and the making of pencils; gypsum and halite, were studied, each child getting his knowledge from specimens before him. Each was furnished with a testing outfit, including what a field geologist commonly carries, except the blowpipe and reagents to use with it; and these children from six to ten soon learned to use the outfit with as much skill as any adults whom I have taught.

In physics, lessons were given on extension and gravity; on the solid, liquid, and gaseous states of matter; on heat as the force producing expansion and contraction; on the evaporation, condensation, and freezing of water, with results in dew, clouds, rain, snow, and the disintegration of rocks; on movements of air as agents producing wind and storms; on the thermometer; on magnets, and two of their uses. In chemistry, lessons were given on air and its composition; on combustion and its products; on iron rust as to formation,

and effects on iron; on  $\text{CO}_2$  as an ingredient of calcite, and a product of breathing; on acids as tests for lime rocks containing  $\text{CO}_2$ ; on the distinction between physical and chemical changes. In astronomy, a few lessons were given on the relations of sun and earth as causing day and night and the seasons.

Botany was pursued in the fall and spring months. In the spring the children planted a window garden, from which they drew plants for the study of germination and growth. From garden and wild plants they studied buds and their developments, and the forms, parts, and uses of some leaves, flowers, and fruits. A series of lessons on plants yielding textile fabrics and the manufactures from them was projected; but, owing to the difficulty of getting plants in proper condition, the only portion given was that on the cotton plants. Fine specimens of these were received from Georgia, which kept fresh nearly two weeks, and showed all stages, from flower bud to open boll of cotton fibre. No work in zoölogy was done, save the giving of a few lessons on silkworms and sheep, as yielding silk and wool. In physiology, lessons were given on the general parts of the body; on the joints, skin, hair, nails, and teeth; on the chest, and the process of breathing and its products; on food and digestion—all with reference to the care of the body, keeping the lungs from disease, and the true object of taking food. Geography was connected with science, history, and literature—the original habitat and migrations of rocks and plants, and the location

of events leading to imaginary journeys. The forms of water and land, and a demonstration of the shape of the earth by the positions and appearances of vessels at sea, were gained in lessons to the country and the sea-shore. Boston and its surrounding townships were studied in connection with lessons in local history. Maps, globes, compass, and modelling clay were used throughout the course.

While the work in mathematics was not so fully developed on new lines as in other subjects, some work done in the first year may be of interest to the reader. In a field lesson of the second week, some distinguishing features of the apple, beech, pitch and white pine trees were noted and branches obtained. These branches furnished material for many days' number lessons. Apple leaves with their two stipules, pitch-pine sheaths with their three needles, beechnut exocarps with their four sections, and white-pine sheaths with their five needles were used by the children in constructing concrete number tables, which—picking up the objects—they recited as follows: "In one sheath of white pine are five needles; in two sheaths of white pine are two times five needles," etc. When the concrete table was familiar, the same number relations were written on the blackboard with figures and symbols. In this manner the children learned the four classes of tables as far as sixes. Meanwhile the study of geometrical forms and the plant lessons gave illustration and review. In January work with money was begun, and continued

through the remainder of the year ; but other opportunities to give practice in number were utilized—as, the six faces of the halite crystal, the six stamens of the tulip, etc. To get unworn coins we sent to the Philadelphia Mint. In two lessons the children learned the names and values of one copper, two nickel, four silver, and six gold pieces ; in the third, by placing piles of coin side by side, they constructed and learned the table :

Two silver half dollars equal one gold or silver dollar.

Four silver quarter dollars equal one gold or silver dollar.

Ten silver dimes equal one gold or silver dollar.

Twenty nickel pieces equal one gold or silver dollar.

One hundred copper pennies equal one gold or silver dollar.

On the following day a new concrete table was prepared, and the dollar sign, figures, symbols, and decimal point were substituted for the words in the written work. The relative values to one another of the lower denominations were taught, and tables constructed and written. The different denominations of paper money up to the fifty-dollar bill were added to the coins ; and this money—about one hundred and fifty dollars—was used in business transactions, which gave review of the number relations already learned, and taught those necessary to the construction and comprehension of the remaining tables. At the end of eight months the children could use and write numbers to one hundred and fifty, and the

signs  $+$ ,  $-$ ,  $\times$ ,  $\div$ ,  $=$ ,  $\%$ , and  $\cdot$  (decimal point); and understood the value of position in notation to three places to the left and two to the right of a decimal point. Also, in the oral work with money, they readily used the fractions one half, one fourth, one tenth, one twentieth, and one hundredth; and most of them could write from memory the usual tables from one to twelve. In this first year no effort was made to do a defined kind or amount of work; the children spent from twenty to thirty minutes each day at some mathematical work, but progress and variety depended on their interest and capacities. A visitor who had spent forty years in teaching sat through one of these primary sessions. He expressed pleasure and surprise at the work of the children in science, reading, and other branches, but was incredulous, at first, about the work in number with the money at their desks, and the written work in figures and signs at the blackboards. He went around among the children, tested them, and watched to see if there were not some trick of parrot-like performance. Finally, convinced of the genuine comprehension of what they were doing by these children of six and seven, he said: "I should not have believed it on the statement of any man or woman whom I have known; but I have seen it with my own eyes."

It is a matter of regret to me that growing burdens of care forbade the development of the number work during the second and third years on the lines begun in the first year. To spend from a half-hour to an hour a day for ten years

at mathematics, with no better results than the average boy or girl of sixteen can show, looks like a great waste of time and energy. May not the cause be twofold: First, that the beginning work is made silly by its simplicity, and insipid by being related to nothing interesting; second, that processes like the subtraction of large numbers and long division are pressed upon the child before his powers are adequate to their comprehension?

The last fifteen minutes of each day were devoted to literature. Selections with biography and anecdote constituted the materials for these lessons. Advantage was taken of birthdays, anniversaries, and natural phenomena. Storms furnished accompaniments to Lowell's *The First Snow-fall*, portions of Whittier's *Snow-bound*, Longfellow's *Rainy Day*, Bryant's *Rain*, Shelley's *Cloud*, etc. Flowers brought by the children were related to readings from Burns, Wordsworth, Emerson, Lowell, Bryant, Whittier, and Longfellow. Emerson's *Rhodora* was committed to memory and recited, a cluster of the purple blossoms being in sight. Selections were made with primary reference to their value. Biography was usually employed to heighten interest in literature; for its own sake when embodying noble sentiments—as Scott's struggle against debt, Sidney's gift of water to the soldier. By such tales of heroic effort and action it was hoped to develop courage, honor, and devotion to duty.

Aside from clear language in narration, accompanied by pictures of persons and places, and such



reading as expresses the rhythm and meaning, no effort was made to have biography or selection understood. Many children have such an appreciation of melody that a fine poem well read will hold their attention. Just before Christmas, in our first year, I read a portion of Milton's *Hymn on the Nativity*, and said, "I hope you will some day read the whole, and like it." "Please read it all now," said several voices. So it was all read, and the children listened intently. Milton's picture was put away, and nothing said of him for a year. When his picture was again put on the easel, a hand was at once raised. "What is it, Tracy?" "I know who that is." "Who?" "Mr. John Milton." "What do you remember about him?" "He gave his eyes for liberty"—an expression which, so far as my knowledge of the child went, he had not heard from any one, but was his own terse summing up of the narrative he had heard a year before, when barely six years old. Most children have such an appreciation of justice and heroism that they will even walk more erectly after listening to a tale involving these qualities. I shall not forget how gravely and proudly fifty children withdrew from the school-room after listening to the story of Sidney's death. An unspoiled child has usually a vivid imagination; and it is as pernicious to meddle with the formation of his mental pictures in literature, as in science lessons to keep telling him what he can get from his specimens. The child's mind should be brought into direct contact with the realities in history and literature, and left to work at



them with the least possible interference and guidance. If a child attempted to repeat a quotation or fact, accuracy was required, but he was not urged to remember. Much in the literature lessons was above the children's comprehension ; but it was thought well for each child to feel a breath from the mountains above and beyond—a breath whose coolness and fragrance he might feel without analysis or comprehension of its qualities. To have felt was enough. So we paid no attention to ordinary poems and tales for little children, but introduced the children at once to Longfellow and Emerson, Wordsworth and Scott, Milton and Shakespeare.

There was regular study of history for each year. Copies of early and late maps of Boston were given to each child ; the older one was drawn on transparent paper, so as to be laid over the later one and show directly the changes and extensions into river and harbor. Colored crayon maps and pictures were used to illustrate the historical narrative. These narratives were drawn mostly from local events—as the settlement of Boston, with certain old Boston worthies as centres about whom incidents were grouped ; the beginning of the Revolutionary War, with a visit to the Washington elm at Cambridge ; some incidents of slavery and the Civil War connected with Garrison. Extracts from diaries, letters, etc., were printed on leaflets and read by the children, who drew their own inferences. These readings from original sources were mostly confined to the third and fourth classes, as the lan-

guage used was too difficult for children of the first two years. Sometimes gratifying volunteer work was done; as an instance, a boy of eight learned the whole of *Paul Revere's Ride*, and recited it, standing at the blackboard and tracing on a colored map of Boston and its surrounding townships the route taken by the rider. This work in history was done by Miss Nina Moore—Mrs. F. B. Tiffany—who developed it with such skill as to fascinate the children and to lead to her publications on these topics. (See articles in *Common-School Education* for September, October, November, and December, 1888; and the books *Pilgrims and Puritans* and *From Colony to Commonwealth*.)

The industrial part of the experiment was started at the beginning of the third year. Each child was provided with a bench and ten tools—ruler, try-square, scratch-awl, saw, vise, plane, chisel, brad-awl, hammer, and nail-set. The children of the two younger classes made a box with the cover hinged on with strips of leather; those of the two older, a case with shelves fitting into grooves. The work was divided into steps; each was mastered before the next was tried. All the children began with the use of the ruler in measurements to an eighth of an inch. The try-square came next. As soon as a true line was drawn, the saw was used to divide the board. After the first day no two children were exactly together, each one's position depending on his own results. The third step—the cross-cut saw—detained most of the children several weeks; a true cut with its

face at right angles to each face of the board was required. This the children tested for themselves. Often during the first work with saws a child would ask, "Will that do?" "Test it," was the reply. Reluctantly the child applied the test, and renewed his courage as best he could. After a time the desire to use a new tool and to get on as some other child did gave way to desire for perfection. This brings me to the chief end of the work—not skill in handicraft or any finished products, but to put before the children concrete examples of the true and the false, in such a manner that the child himself should judge his own work by some unvarying standard. As an instance of the moral effects: One of the older boys was the first to finish the shelves and both sides of his case, all but one groove. The excitement of this eminence dizzied him, and the groove was a failure—being too wide, it left an ugly crack above the shelf. No one was more sensitive to that ugliness than he; but the struggle between his desire for perfection and the fancied humiliation of making another side and letting some other child be the first to complete a case went on for some time. Finally, with a manly effort to keep his eyes from overflowing, he laid the faulty side among the failures and began again. To give up the work of many days, and the prospect of coming out ahead, was to win a great battle, not for himself alone, but for his comrades. For use, the rejected side was almost as good as perfection itself; to ideas of truth and beauty the boy's mind yielded obedience. Such yielding of

lower motives to higher ones, such discipline of patience and judgment as these lessons gave, were not reached in any other line of work.

Most public schools for primary children have two sessions a day for ten months; in the experiment there was but one session a day for eight months. In the former, five hours or more a week are spent in reading alone; in the latter, less than five hours a week were given to the science lessons and to the reading drawn from them. The saving of time in other studies was almost equally great; and besides the large body of superior knowledge opened to the children, the ordinary proficiency in all subjects commonly taught in primary schools was generally reached. This demonstrates the fallacy of the current opinion that children cannot be taught science, history, and literature, and at the same time master the usual three R's allotted to them.

But the experiment aimed to introduce the child to the world of real learning, with the idea that such introduction would produce certain effects on his mind; and it is by that aim and those effects that it should be judged. As to the former, the reader has but to examine the body of knowledge outlined, and judge whether it is worthy to be called real learning and the foundation of knowledge.

Among the effects, perhaps the chief place should be assigned to the general attitude towards study. Compare two children trained in the two ways. On entering school both are equally

eager and happy. One is kept for the most part away from learning, and laboriously taught to hold the empty wrappers of it; the other is taken at once into the shrine, where he soon becomes at home; and, while he gets wrappers as rapidly as the child outside, every one is full and overflowing. The former grows tired of tasteless drudgery and longs to have school days over; in the latter, nearness to the central fires kindles the sacred flame, and its shining through the fleshly covering makes his face a contrast to that of the other child. One finds the school-room a prison; the other an enchanted land where all is "truly true." If both leave school during the first six years—as so many do—the former is likely to have vague notions about a large field of study, and but little interest in its contents or faith in their value; while the latter will be as likely to preserve sympathy with learning, and desire to advance it in himself and others.

Among other effects may be mentioned:

1. The children learned to ask serious questions. In a lesson on clouds and rain, Emma asked, "Why is the rain not salt, if most of the cloud vapor comes from the ocean?" She was told to dissolve a certain amount of salt, to evaporate the solution over a fire, and note results. On the following day she reported that the same amount of salt was left after evaporation as she had first used, and gave as her conclusion that ocean-water in evaporating leaves all its salt behind; and the youngest boy added, "Then only pure water can float up into the blue sky."

2. They learned that opinion without knowledge is folly. In planting a window garden, they put seeds in pots of earth; I, between wet blotting-papers. Their decided opinion was that my seeds would not grow. A week later they were eager to give this sentence, "The seeds in Miss Alling's garden did grow."

3. They became fond of mental activity. They were not marked, formally examined, hurried, nor required to do a certain amount in a definite time. This freedom and leisure transformed their first laborious, timid thinking into a delight, which they entered upon as spontaneously and fearlessly as upon their outdoor physical games.

4. Their habits of thinking improved. At first they showed but a superficial interest in the objects studied, and much questioning was needed to direct and hold their attention; later, they voluntarily seized upon the marked features of objects and phenomena, and pursued them until practically exhausted. We did not flit hither and thither, giving the children new objects of study each day, but kept them at work upon one so long as it could yield anything within their comprehension. As an instance, successive lessons on the cotton plant were given for three weeks.

5. Their perceptions became almost unerring. At the Museum of the Boston Society of Natural History, one day, Katherine exclaimed, as we rapidly passed a case of minerals, "There's some graphite." Turning and seeing whitish specimens, I said, "Oh no; have you forgotten how

graphite looks?" The child insisted, and we turned back to the case. Sure enough, on one shelf the white rocks contained grains and threads of graphite, which fact the child had gathered in one rapid glance.

6. Memory became active and generally true. It was aimed to pursue all things in order, with regard to natural relations and associations; beyond this the cultivation of memory was committed to the qualities of the ideas presented. The result seemed to prove that memory is retentive in proportion to the activity and concentration of the whole consciousness, and that this is proportioned to the interest of the subject-matter.

7. Imagination was vivid and healthy, producing clear reproduction, apt illustration, sometimes witty caricature, and occasionally thought and expression delicate and lovely enough to be worthy the envy of grown-up *literati*.

8. There was a beginning made in the habits of independent examination of any matter, of honestly expressing the results of such examination, and stoutly maintaining one's own ideas until convinced of error, and then of readiness to adopt and defend the new, however opposed to the old. These habits lead to mental rectitude, robustness, and magnanimity, which qualities confer the power of discriminating values: for pride of opinion gives blindness; the love of truth for its own sake, sight.

9. In waiting for Nature to answer questions—sometimes they waited three weeks or more—and in continual contact with her regularity and



dependence on conditions, they gained their first dim conceptions of what law means, and of the values of patience and self-control, and of realities as opposed to shams. Finding in Nature mysteries which the wisest have not explained, a half-conscious reverence stole upon them — the beginnings of true spiritual growth.

At first the experiment called forth much criticism. At home the children told about rocks and plants, and related stories from history and literature, but said little about reading and writing. Parents came to see, and universally condemned the method. One mother said, "My daughter will study geology and literature when the proper age comes; I wish her now to learn reading and writing, and have simple lessons in arithmetic and geography." But she yielded to her child's entreaties, and allowed her to be experimented upon. Later, this mother visited the department to express her wonder and satisfaction at her daughter's progress in reading, writing, and number. A father, after visiting the department, said, "My boy isn't learning anything; he's having a twaddle of experiments." Three months afterwards he said, "My boy's whole attitude of mind is changed; he looks at the world with new eyes, and is also progressing rapidly in the studies common to children of his age."

A criticism frequently met was that the vocabulary was too difficult, and, being largely scientific and technical, could not fit children to read children's books. Experience proved the contrary. Reading for ideas, the children were not deterred



by a few unfamiliar words. In reading stories in books, they could usually get the principal ideas; and to infer the meaning of the unknown forms had much novelty and interest. It was also objected that the ideas themselves were too difficult, and could not possibly be comprehended by the children. In a language lesson of the second year, Frank gave the sentence, "The soil is thin." A visitor asked, "Did you ever see a well dug?" "Oh yes; at my grandfather's, last summer." "Was the soil there thick or thin?" "Thick." "How thick?" Looking from floor to ceiling, "Thicker than from this floor to the ceiling." "Then what do you mean by saying that the soil is thin?" was asked, in a mocking, disconcerting tone. Frank dropped his eyes in thought; after a moment he said, "I mean it is thin when you think of *all the way down to the centre of the earth.*" This boy entered before he was six years old, and was at this time barely seven.

Teachers who visited the department said, "You have a comparatively small number of children from cultivated families; even similar results could not be obtained in the large, miscellaneous public-school classes." This could be met then by the statement only that mind has everywhere the same elemental possibilities, and must yield similar results for the same influences, although the time required might be much lengthened. This criticism has now been answered in part by the results of a trial made in the public schools at Englewood, Ill., an account of which is given below.

The few scientists who knew of the experiment looked on with favor. "It is the ideal way," said one: "A realization of my own dreams," said another. An eminent leader in educational affairs in this country objected that the great majority of our primary-school teachers could not follow in the same line because lacking the requisite body of knowledge. When courses of study for lower schools are made out by eminent specialists with a view to putting into the hands of children the beginnings of their own lines of research, and when school authorities provide courses of lectures and other means of furnishing to teachers the necessary body of knowledge, I think teachers will, as a whole, be quick to respond to the demand and the opportunity—as a release from the belittling effects of their present monotonous drudgery with trivial ideas, if for no higher motive.

In conclusion, the reader may wish to ask, "Was the experiment, after all, a success?" I answer, "As a demonstration of the possibility and value of introducing little children to real learning, yes; as a realization of my ideals, no." I was conscious that there was much that was superficial in the work, and that in striving to avoid shadows and to grasp the real substance of education I often grasped but another and a finer sort of shadow. May some other teacher, having greater fitness for the work and a longer opportunity for effort, reach the goal for which I started! The instruction such a one could give about primary education is needed all over our beloved land.

## II

### AT ENGLEWOOD \*

ENGLEWOOD, Ill., is now a portion of the city of Chicago; but formerly it was a suburban town with an independent school system. In October, 1886, Miss Frances MacChesney, a primary teacher in the Lewis School, obtained permission from her principal, Miss Katherine Starr Kellogg, and her superintendent, Mr. Orville T. Bright, to try some work on the lines wrought out in the experiment made at Boston. Her request was granted, on condition that she would complete the grade work in the required time.

At first nothing was attempted beyond the giving of simple science lessons as bases for reading lessons. In these the children were furnished with specimens, and led through their own observations to the acquisition of facts and ideas, which the children expressed; these expressions put upon the blackboards constituted the reading matter, and were written in script or print on slips of paper for further use. At this time Miss MacChesney herself thought of the work mainly

\* Reprinted, by permission, from *The Popular Science Monthly* for February, 1892, where it bears the title "An Experiment in Education."

as a more interesting way of teaching reading; and, although the basal lessons were usually drawn from Nature, little attention was paid to the quality and value of the ideas thus used. Later, the fundamental idea of the Boston experiment was taken up, and the chief attention directed to the selection of topics and materials for real science lessons.

In this work no effort was made to introduce the vocabulary of the reader assigned to the grade. In February that reader—*Appletons' First*—was given to the children for the first time. To quote Miss MacChesney's own words: "The interest which had been awakened by the reading of their own thoughts was transferred to the books, and the grade work was completed before the required time—thus more than fulfilling the condition on which the trial was allowed to be made."

The work in reading went on in this manner during a second year, all other grade work being done in the old ways. During the third year systematic lessons on minerals and plants were given and work in literature begun, and the children's sentences were written out on a typewriter. In a letter written at the close of this year, Miss MacChesney says: "Out of a room of forty children, divided equally into two classes, one class finished the first year's work in eight months; the other class, with the exception of two children, completed the grade work at the end of the year, besides doing all the extra work; and the whole was accomplished with ease and happiness

on the part of both pupils and teacher." During the first year of trial, another teacher in the Lewis School, Miss Quackenbush, became interested in Miss MacChesney's work, and began a similar attempt with her own class. In a short time she produced excellent results.

From the first, Mr. Bright carefully watched the progress of the trial, and willingly and patiently waited its results. When convinced of the superiority of the principles involved and of the results obtained, he earnestly championed the cause, and has continued to be its enthusiastic supporter.

During the second year, teachers' meetings were called, discussions aroused, illustrative lessons given, courses of lectures for the teachers projected, and other teachers joined in the work. A teacher wrote me at the time: "I never saw teachers so ready and eager to 'speak in meeting'; . . . I never saw them so thoroughly awake." Finally the principals and teachers of the Englewood schools generally waked up to the fact that something new and interesting was going on in their midst; the idea spread, and many visitors came from adjoining towns.\*

\* In the fall of 1888 Miss MacChesney gave a series of lessons on grasshoppers and beetles. These the children caught for themselves, but she herself killed and preserved them in alcohol. The following summer, while teaching at an institute, she was attacked quite fiercely for this part of her work, on the plea that it was inculcating cruelty. I should like to ask all who bring this plea whether they eschew roast beef for dinner. Shall a million beasts of a high grade of intelligence and finely wrought nervous systems daily witness the

At the beginning of the fourth year a printing-press was provided; but each teacher furnished her own type, set it, and did the printing for her class. During this year, after four months of the new work, one division of Miss MacChesney's class "completed the grade work in reading in three months, a thing never before done at Englewood." Concerning this year Miss MacChesney says further: "From the experience which this year has brought me, I am thoroughly convinced that, could the average child have from the first the results of his own observations put in printed form, and enough of phonics to enable him to find out new words, the reader could be withheld until the latter part of the year, when it would be read with relish, and as a book ought to be read. . . . The power gained by the children to observe closely, to tell clearly and concisely what they have observed, and the power of logical, connected thinking is not confined to their

scenes in ten thousand slaughter-houses, and themselves be the victims of the loathsome indifference to cruelty there practised—shall this exist and pass uncondemned, because its results are pleasant to the appetite of the body, and the cry of cruelty be raised when a few hundred grasshoppers are killed for purposes of study? Is the body of more value than the mind, and nourishment more desirable than knowledge? So long as slaughter-houses exist, so long will it seem desirable to teach children reverence for animal life by minute personal study of the wonder and beauty of organ and function in the lower forms. When slaughter-houses have been done away with forever, the human mind will find a better way to teach zoölogy. Let the cry of cruelty go forth, but not from those whose own flesh is built up from the flesh of their brute brethren.

science and reading, but is felt in all the work of the school-room. . . . In looking back over the time since we began working out this theory, I see a constant increase in the power of the classes that have been led along this path."

In regard to the influence of this work upon herself, Miss MacChesney, during the third year, wrote me: "At night I can hardly wait the morning, so eager am I to begin another day, and see how the children will go through the work planned for that day." Here she reaches the true work of the teacher—to watch and direct the growth of the children's minds. From letters received from Miss MacChesney during 1889-90 I cull the following: "I started out to try what seemed a theory of doubtful utility to public-school children, and found all my work and my life enlarged and beautified. . . . I am certainly happier than I have ever before been in teaching, and I know I am doing more for the children intrusted to my care. . . . Mr. Bright, in order to speak with assurance about these matters, visited fifteen city teachers; and in no case did he find the attention of teachers or children directed to anything but the symbol, and in no case were the children further advanced than ours where thought and symbol go hand in hand. . . . I did not meet with any opposition in the work. The only requirement that I must meet was 'the grade work accomplished in the required time'; and whether I could do that was asked over and over again. . . . The greatest trouble" (referring to the days before they had a

printing-press) "was the lack of printed matter. I met no criticism from parents and much praise. Especially was this true of the work in literature. . . . The criticism oftenest given by visiting teachers is on the 'big words,' as they call them." Elsewhere, in regard to these "big words," she says: "They" (the children) "were proud of their new possessions, and lost no opportunity to use them, and use them correctly. The so-called 'big words,' when they express a definite idea, are remembered with ease, while their humbler sisters which express nothing tangible are more readily forgotten. . . . We can say emphatically that the work can be done in the public schools, and that both teachers and pupils are benefited thereby."

Another Englewood teacher wrote me: "The teacher gains an impetus in searching for and assimilating real truth to give to the waiting little ones. . . . I believe the parents of our children are becoming awakened, for children tell me of searches made at home to answer whys and hows, whens and wheres, that have been raised in the work at school."

Miss Walter, critic teacher at the Oswego (N. Y.) State Normal School, after a visit to Englewood in February, 1890, wrote me: "It has been my good fortune to see within the last week some of the best school work I have ever seen. . . . It was in the rooms of Miss MacChesney, Miss Quackenbush, and others that I saw such admirable work. . . . Miss MacChesney is carrying out in a wise and careful manner an ideal line of work."



In closing this account of the new work at Englewood I cannot do better than to give quotations from two letters received from Mr. Orville T. Bright, the superintendent under whom all this experimental work has been done. He says:

*December 15, 1889.*—"We are now harder than ever at work studying how to make observation a living element in our schools. . . . We have thirty—yes, forty—teachers now who are thoroughly in earnest in the matter."

*March 9, 1890.*—"It is about three years since Miss MacChesney began the work. Miss Quackenbush soon followed, and the next year Miss Phelps, all in the Lewis School; . . . and the fact was demonstrated beyond a doubt that fifty children are no bar to the success of a teacher in training little children to observe in subjects pertaining to science.

"All our primary teachers slowly wheeled into line. We had numerous meetings and discussions on the subject, and every one who tried the work was convinced. The stand of the superintendent had been misunderstood from the first, but he did not think it wise to force matters. He wished teachers to undertake the work because they believed in it; and now every first and second grade teacher in the district—thirty-five in number—are in hearty sympathy, as are almost all of the third and fourth grade teachers, about sixty in all. Not all, however, are at work.

"There has been no systematic arrangement of material, only so far as individual teachers have made it in a small way. Our aim has been to

demonstrate the feasibility of doing the work with large classes, and to prove the growth of children under the training possible. These two things we have done ; and we are now at work upon a related plan for the several grades. The scheme must be a flexible one, and it can be so arranged ; but the second grade work must grow out of and be an advance upon the first, and so on. We have discussed *motive* first for several weeks. Now we are on material ; then will come method. These I cannot write about now. We hope to see the subject in some kind of shape before the end of the school year."

Do not the results of the trials at Boston and Englewood virtually constitute a plea to parents and teachers to investigate this matter—not necessarily to follow, but possibly to get suggestions about a better way ; for the contemplation of a new thing sincerely conceived sometimes leads to the inspiration of a better ?

Pupils in all sorts of schools seem, for the most part, unable to distinguish between opinion and fact ; their reasoning processes are easily overturned, imperfect, slovenly ; their power to discriminate values is slight ; and the whole working of their minds lacks cohesion, totality, and gradation. Is not the human mind naturally capable of trustworthy action, and is not the lack of such action in the average adult due to faulty education ? To see clearly, judge fairly, and will strongly—are not these the great ends of education ? Should not a man have as great a consciousness of

mind and of power to think as he has of hands and feet and power to use them; and should he not be as unerring in the right use of the one as of the others? Should not the schools give this consciousness and power and mental skill, and also fill the mind with ideas worth the effort of getting and retaining?

The maxim "Ideas before words," adopted by teachers like Professor Louis Agassiz, has produced great results in changing the methods of study in the natural and physical sciences. This influence has extended to other departments in the older centres of learning, but the majority of our higher schools are yet scarcely touched by it. In these, study results in little more than filling the mind with words; and from them students pass into life without the taste or ability to examine and estimate facts, and to form independent judgments and volitions.

In primary education the maxim "Ideas before words" is repeated with tiresome iteration, but seldom is a question raised about the value of the ideas taught. Do the charts and books for primaries express aught that is unfamiliar to children? Rather do they not contend for the merit of expressing most completely the commonplaces of child-life? Is there anything worthy to be called thinking or capable of arousing interest and emotion in memorizing combinations of symbols, and associating them with familiar and trivial ideas? And let us see what "object-lessons" chiefly deal with. Last year, in a normal school of the Empire State, a teacher of primary methods, proudly

claimed by her principal to be the best in the State, gave thimbles, scissors, chairs, etc., as suitable subjects for object-lessons, and carefully led her pupils through the steps required to develop in children's minds ideas of the parts and the uses of these objects. Is there one child in five hundred, at six years of age, ignorant of these parts and uses? Then the so-called development process is a farce, and a waste of time and energy. Look over manuals of object-lessons and courses of study for primary children: you will usually find but few subjects leading the child from the beaten path of his daily life into new, inviting, and fruitful fields; and of these, note the directions as to what is to be taught. Such directions often resemble a lesson on a butterfly that I heard given by a kindergartner. With a single butterfly held in her hand she led the children to speak of its flying in the sunshine, sipping food from the flowers, living through the summer, and of the beauty of its colors. Not a word was said of the three parts of the body, the two pairs of wings, the six legs, the antennæ, and the tube through which it sips food—all of which and more the children could easily have been led to see. Doubtless the teacher thought the children had had a beautiful lesson; but had they received anything at all? Although city children, they spent the summer in the country—they had all seen and probably chased several species of butterflies, and possibly some of them knew more than their teacher about the habits of butterflies.

Think of children gathered by fifties in thou-

sands of school-rooms, spending the first years of school-life in repeating *trivial facts and ideas that have been familiar from babyhood*; in learning the symbols for these ideas, and in counting beans and bits of chalk! The five-year-old boy who described a kindergarten as "the place where they are always pretending to do something and never doing it," and the eight-year-old girl who, after reading the first few paragraphs of some ordinary primary reading matter, looked up at her teacher and said, "I think these sentences are very silly, don't you?" are not alone in preferring the lessons of the street and the field to those of the school-room. In such dealing with trite ideas the child gets little mental exercise, gets no addition to his knowledge save the written and printed symbols, gets no increase to his vocabulary, and little facility in using it. For these slight gains he gives the freshest, best years of life, and exhausts in weariness of spirit the fountains of intellectual interest and enthusiasm.

In the experiment an effort was made to bring the child at once into contact with the real substance of education. It is this concentration of attention upon the subject-matter, not upon the method of teaching it; on the kind of ideas, not upon the symbols of ideas, that chiefly differentiates this experiment from ordinary primary work, and makes the use of the word experiment legitimate. The value of method is heartily conceded, but what shall be taught was thought to be of more importance. Is it not a law of Nature that new and valuable ideas only can arouse inter-

est and lead to worthy thoughts? When such thoughts exercise the mind, do they not exclude the transient and trivial, lead to culture and right conduct, and so further the true end of existence—the perfectionment of the soul?

Do not the showy, the superficial, the transient, the seeming, rule the hour? Where do we find the heroic dignity that should inhere in man and woman? Few pursue truth and righteousness for their own sakes regardless of consequences; in few does the love of humanity overcome the shrinking from poverty and calumny. Are we becoming a nation of cowards and infidels, that we can fear nothing but material and intellectual discomforts in this one short life?

To awaken love for great literature, to arouse interest in local history, to develop a habit of observing Nature's phenomena—to do these before the mind has sunk itself in materialism and the love of sensual delights—to do these while the child is still so young that mind and heart are plastic and responsive, is indelibly to impress the idea that these are the legitimate objects of study whose pursuit leads, not to learning only, but to nobility of mind and to real, satisfying pleasures. One cannot know and love the great in the world's literature and not be ashamed of mean thoughts; one cannot be a student of history without bringing to bear upon the affairs of our own time a greater intelligence than the majority of our politicians exhibit; one cannot habitually observe Nature's phenomena without extending that habit to the highest and most interesting of her

creatures — man ; and one cannot observe man, with any depth of insight, without being profoundly impressed, not alone by the miseries of the very poor and the never-ending drudgery of the laboring classes, but by the lack of unselfish zeal, heroism, dignity, truth, gentleness, generosity, and purity among the well-to-do ; one can hardly view the course of Nature and history from remote ages to the present without seeing through all a tendency to completion, order, and beauty on an ever-rising plane, like the threads of a spiral ; and, seeing this, to desire to be himself in harmony with that tendency and a factor in aiding it in his own time.

I put forth no claim to the Boston experiment or the Englewood trial as a cure for existing evils ; but I urge every educator who loves mankind to investigate each new departure in education, to test any that seems to have good in it, to cease to concentrate attention on symbols and shows, and to turn thought to such realities as can nourish the mind and heart, and be retained as valuable furnishings for all the years to come, and to do these from the first day in the primary school.





## Part III

### IDEAS UNDERLYING THE EXPERIMENT

These ideas were by no means all appreciated and formulated when the experiment began nor during its progress. Most of them were but vaguely felt after. The one clear thing then was that children must be at once introduced to real knowledge, be given something worth their efforts, and treated as rational, natural human beings who ought not, even if they could, be made to greatly care for the symbols and shows of learning in the absence of the real substance, nor led to imagine that they were being mentally and morally nourished—that is, educated—when fed on chaff mainly.



# I

## QUALITY OF STUDIES

A HEALTHY body is approximately straight, supple, and symmetrical; and in a healthful environment, with proper nourishment, it remains so. Such a body seizes with avidity upon the nourishment provided for it, and by inherent selective processes takes out and assimilates into good bone, nerve, and muscle certain elements in its nourishment, and as inherently and unerringly rejects and ejects other elements.

These apparent facts about a child's body, transferred to his mind, constitute an assumption which was made the fundamental basis or hypothesis on which the experiment was conducted.

The first fundamental excellence of mind, according to this analogy, is an inherent integrity, which, put into other words, means a fairly unerring capacity to discriminate between the nutritious and the non-nutritious, between mental substance and mental chaff; and not to discriminate only, but to retain the substance and to eject the chaff. This integrity would have its basis in powers of attraction and repulsion, which would be natural and spontaneous in action, and

approximately unerring for each unspoiled child, at any stage of growth.

Variations in these attractions and repulsions would arise between different children, and in the same child under varying conditions of circumstance and age; but if the right sort of mental environment and nourishment could be hit upon, these variations must be sufficiently slight to allow of uniting a small number of children in one group for school work; and ultimately, after many and varied experiments, certain general laws about mental growth ought to be determined, the application of which would allow due weight and play to these normal variations.

This theory presupposes, not only natural attractions and repulsions, but that the qualities of these at any given age are what may be called normal; and by normal is here meant such attractions and repulsions as by their use would preserve and increase the present mental status of the individual and the race.

If such a condition exists as a fact in human psychological life, it has existed in past ages; and, despite of conditions adverse to its best preservation and development, may be supposed, in the long-run, to have had its way with the race; so that the present mental status and condition are as normal as the present physical status and condition are. In childhood, under the best human conditions, the latter is certainly charming, and its natural tendencies are approximately trustworthy; and it is here assumed that the former is equally so.

According to this theory, whatever is worth retaining would be retained firmly, subject to instant use, and ejected or lost only when its owner had no immediate further use for it. This is not intended to push the physical analogy to extremes with reference to limits of time, but to leave each child to retain what he will and so long as he will, be it a day or a lifetime; and to trust his mind at least as much as his physical body is trusted, to take, to keep, or to refuse and to eject whatsoever and whensoever it pleases.

In a few months of fetal life a human body passes through the stages of its inherited animal ancestry, and in the remaining it gets through with its inheritance of a savage human ancestry; so that at birth a child who is born in an average American family is no more a savage than a tadpole.

It is not intended to discuss here the facts of evolution and heredity, or to express belief or disbelief in a human genealogical tree which is a continuous development, whose missing parts will yet be restored by science, or a tree whose bole is an assumed life process which has not yet had physical expression, and whose branches each represent some specialized expression of that life, but which have no organic, causal connection from branch to branch, save in that unknown, unexpressed central core or bole. With these questions this book has nothing to do; but what it desires to insist upon is that, granted the main facts of heredity as generally stated and accepted to be true, at birth a child has presumably passed

as many hereditary mental mile-stones as it has physical ones.

Two years after birth a child begins to eat of the physical food which his parents eat, and to ask questions which his parents cannot answer ; and thereafter an exclusive diet of pap is as ridiculous and as harmful to his mind as to his body.

But physical pap is luxurious nourishment compared to the mental diet which is daily served in thousands of school-rooms to children not two but six years of age ; for pap is made of the finest, most nutritious portion of some grain and of milk, the most universally nutritious of all foods ; while husks and not kernels, expressions and not ideas—the poorest and simplest symbols of knowledge—constitute the chief elements of the daily mental food of children in the average school-room.

That kind and quality of physical food which are most wholesome for an adult are also most wholesome for a child of school age ; and it is here assumed that the kind of mental interest and activity which most conduces to the healthful satisfaction of an adult mental life will best conduce to a child's mental happiness and normal mental growth.

Excluding a few specialists, unspoiled adults do not select fairy tales, myths, goody-goody or sensational stories, nor silly and meaningless rhymes for their exclusive daily mental nourishment. What a man of average mental cultivation would choose for entertainment in hours of relaxation from business—that book or occupation with which he would fill these hours, provided that

from all books and all occupations he could choose—that is equally good for the child at his knee. The child could not take so much of that book or occupation as the father; but the differences would be of quantity mainly, not usually of quality.

When freed from necessary cares and allowed spontaneous choice, men instinctively turn from the details of their necessary occupations and from all familiar and forced activities to those which are unknown, unfamiliar, and which satisfy, or are supposed to satisfy, some permanent want. As fresh food is sought for the body, so are strange by-ways of mental life sought for mental rest and recuperation; and the more unlike his daily mental labors a given by-way is, the more restful it is to the man's jaded mind.

In every child's home environment is that which corresponds to a man's regular occupations—familiar sights, sounds, and activities, which, for a while engrossing, become intolerable; hence the proverbial restlessness of children. Why should school life prolong this mental torture? Yet the maxim "Begin with the familiar and childish things" has long been the guiding principle for the direction of the child's first years at school.

Not the familiar, but the new; not the near, but the far; not the easy, but the difficult; not the symbols and shows of man's superficial existence, but the realities and substance of that which man preserves from age to age are worthy to be offered as the mental diet of a child.

The fact that a child can frame a question

about a topic is presumable evidence that he can receive the rational answer which a man learned in that topic could give him. Stripped of technical expressions, some of the greatest facts and ideas admit of being truly embodied in such words and illustrations as an average child can understand.

Understanding is not necessarily such a comprehension of all phases and points as admits of re-expression in some glib phrase; and one of the greatest tortures inflicted on childhood to-day is the forced reproduction or giving back of all mental food received. The hour of entrance of a child into an average school-room is the hour of entrance into mental bondage, of life under an inquisitorial system which gradually stultifies natural mental activities and choices. From such a school-room the child is turned out at last, after a few years more or less, little better than an artificial mental machine. Thereafter, in actual life, the man laboriously unforms, bit by bit, the habits so painfully acquired in school-days; and the average man goes to his grave without knowing what a precious inheritance he had possessed, which a well-meaning school régime made him incapable of appreciating or using.

Who advance the frontiers of learning and make use of great libraries? Out of our seventy millions, how many are there? Each child is born into the inheritance of all there is, and with some degree of capacity for improving or increasing that all; and yet few of those who are most carefully educated justify by use to themselves or



to their fellow-men their right and share in this vast inheritance.

It is not that love of learning is dead, nor that specialization has made it impossible for all but geniuses to be much more than mental machines for the working out of minor details in a very small field; it is because during childhood and youth natural, normal mental growth is thwarted, and for college and university is reserved nearly all of that portion of our great inheritance in which men have or can have any vital, instinctive interest.

Let children and youths be given the best which the race has cared to preserve, a little of every kind, and a specialist who is such and no more, lamentably ignorant of everything outside of his chosen field, could no longer exist—he could not be produced; this would in itself be a gain to humanity devoutly to be thankful for. The few great who survey the whole field, and have regard for the whole in every advance of their own chosen lines, are not here meant, but that army of lesser specialists whose mental life always remains provincial, and who, in consequence, aid in still further warping every younger mind with which they come in contact.

This, then, is the fundamental need of education—to give the child from two years old and upward, according to his powers, such mental pabulum as adults find nourishing and satisfying; and to do this fearlessly, throwing aside all notions of what a child can, and what he cannot, comprehend; and to trust the child's own

inherent mental life to take, to keep, or to reject and eject what is offered.

All natural phenomena are presumably under law, which is the stable reality in changing phenomena. When such a stable reality for the varied processes of education has been discovered, on and through it can be created such system and order in school life as have not yet been known; for either it must be presumed that torture is the normal stimulus to mental growth, or that such a stable reality when found will make mental activity as natural and spontaneous a delight from cradle to grave as physical activities now are, and this to all people.

And when the natural, normal integrity of a healthy, vigorous mental life is restored, not to childhood where it perpetually recurs, but to youth and manhood through its preservation from childhood, the social questions which baffle the statesmen and make the interior moral misery of the earnest man will, by virtue of that integrity, find natural and wise solution, not in forced but in spontaneous reforms.

## II

### ORDER OF STUDIES

To the average adult it is the content of knowledge, and not its forms or modes of expression, that is of chief importance, either for practical use or for entertainment. The forms of expression *per se*, in which knowledge has been handed from age to age are, with few exceptions, studies for specialists only, for grammarians and philologists; to most other students of these forms their study is a drudgery to be gone through with for the purpose of getting at the contents locked up in the forms.

This may be due to the fact that most teaching of languages in schools and in private classes is either superficial or vicious in being divorced from the true end of language—viz., to be a symbol of thought. This is not the place to discuss this matter; and what is desired here is to point out that, under existing conditions, language as language merely, a system of symbolic forms, is not for the average person a subject of study or of special interest. For the purposes of this chapter, then, it may temporarily be excluded from the child's curriculum.

Mathematics also have little interest to the

average adult beyond the necessities of business transactions. Beyond the requirements of daily intercourse with his fellow-man, mathematics are dropped almost completely from consciousness; and forced attention to them would be regarded by the average adult as even more irksome and useless than forced attention to languages.

By the average adult, languages and mathematics are regarded, not as knowledge or content of learning, but as its tools merely. To an artisan tools are indispensable; but no condemnation would be considered too severe to pass upon that artisan who should almost exclusively keep an apprentice for ten years looking at and arranging in varied combinations the tools of his trade. All children are apprentices to the art of living; parents and teachers are the artisans who are supposed to train them for this art, and it seems not unreasonable to ask that tools shall be given no faster than a child can begin to make intelligent use of them.

This discussion has been pursued far enough if the reader understands that what is desired here is to express the idea that instruments of expression as such should not be presented to a child as its object of attention; but rather some fact of knowledge, some content of experience, to get which or to communicate which he must use an instrument.

The primary instruments which are used by child and adult alike to get at knowledge are the physical and mental powers; and forms of expression are but secondary instruments, interme-

mediate symbols which serve as links between man and his fellow-man. The symbols are of no value save when filled with content; and the association of a given symbol with its best, usual content, and the arrangement of symbols when filled so as to convey the greatest possible amount of content in the most agreeable way, are the only uses, and the highest, fullest uses, which these symbols can have to all but the students of their origin, past uses, and development.

Reading, writing, composition, grammar, and rhetoric must share the fate of that which includes them—become the incidentals and not the objects of study in a child's curriculum; and all number, arithmetic, geometry, and algebra must also be excluded unless some better way than the manipulations of numbers and forms, as numbers and forms, can be found, even for the youngest child. Drawing, as an object of study pursued for its own sake, is open to the same objection, since in essential nature it is a mode of expression, a form of language, and does not rise to the dignity of anything more, save in the hands of a few great artists. To make the subjects named objects of study is to specialize, and specialization is usually reserved for the colleges.

The content of knowledge, for the purposes of this book, may be roughly classified under two heads—nature, or the physical universe, including man's body; and man, or the psychic universe, which is known to man in himself and his fellow-man. It is not intended to base this classification upon any distinction between body and mind

*per se*, but to use the average man's thought that the external world, including his own body, is not himself; and that his fellow-man, like himself, has a realm in consciousness which, at present at least, he does not regard as physical—to use these ordinary common-sense notions as a basis for a convenient classification.

Under this classification, nature will include the physical and biological sciences; and man, the historical and social. These might be further explained by being included under physical phenomena and psychical phenomena, which together make up the content of each individual consciousness, and of all knowledge to which man has access. All the conditions of life and all objects of thought are referred to one or the other of these realms, by the adult consciously, and by the child unconsciously.

Whatever be the reality in the relations between mind and body, in the present stage of man's development, it seems desirable that he should distinguish clearly between them as two sets or series of realities which should neither be confused nor mistaken the one for the other.

If this distinction is to be valid to the adult, it must be made valid to the child; for that confusion which becomes a habit in childhood will probably never be wholly eradicated.

And this constitutes what seems to me an adequate reason for excluding myths, fairy tales, and fiction from a child's mental pabulum until the distinction between physical phenomena and psychical phenomena is clearly established in his

mind. To live largely in a dream-world peopled by fancies is neither natural nor rational; and they who insist on making such a world for a child on the plea of leading it through the early experiences of the race, do what those early experiences never did, and make for the child a world which has no counterpart in any historic time.

Myths, at their germination and growth, were to the peoples who produced them the most ultimate, sacred realities; and at first, being presumably objective, physical facts, they in course of time came to have a psychic, symbolic existence which was disassociated from those physical objects which were the germ of their being. It has always been true, and still is, that ordinarily when myth or story has been completely disassociated from physical content men have had no further use for it save as a curiosity of what men are then pleased to call a cruder, more rudimentary phase of development.

Could a parent or teacher be found who would in good faith teach myths and folk-tales as realities now, that parent or teacher would be entitled to teach them; but this would imply the possession of a mental content which most men would despise. The claim that courtesy, kindness, and certain moral precepts can best be inculcated through such tales is a claim that object-lessons in the virtues cannot be found in the child's present and actual social environment; and that the moral experiences of the present age are inferior to those of past ages; and indirectly it confesses that the present social and moral stimuli

which can be brought to bear upon a child's development are inadequate. This arraigns the whole social and moral structure of our civilization.

In reply to this it may be said, with the old Greek Heraclitus, that good comes to consciousness as good only when seen beside an evil which is its negation. However evil our civilization is, the consciousness that it is evil or inadequate at any point is the fundamental step towards the doing away of the evil; and, furthermore, the environments of to-day afford opportunities for the inculcation of all the virtues which can be understood or practised.

Confusion between thinking and doing, between the physical and the psychical, is nowhere more widespread and pitiful than in just this direction of the moral virtues. To hold certain ethical standards as ideally true and approximately perfect, and daily to commit and approve acts which, according to those standards, are moral atrocities, is no uncommon experience of even the best people. Either some ethical ideals which man has cherished for centuries are inherently false as human ideals or have been misunderstood; in which case they should be openly rejected or explicitly stated in terms which cannot be misunderstood, or ways of avoiding the present confusion should be devised.

It is not meant, in the above paragraph, that man has or should have no ideals which are unattainable in his day and environment. As soon as attained, an ideal ceases to be ideal and becomes



actual; and the ideal, as such, is continually receding—because continually transformed—from even the most ardent seeker; but to hold ideals which reason and common-sense declare to be unattainable, because incompatible with the supposed trend of human development, is to divorce the ideal world from the actual, and so to remove the ideal from the realm of conduct to that of mere sentiment.

It may be objected that this divorce of conduct and thought is proof of clear distinction between the physical and the psychical. As immediate fact it may be; but that it is an outcome of a former confusion, a reaction against a dream-world which could not be made real, is probable. Having possessed a dream-world which was once real, and found the actual world of life so different that dream-realizations were impossible, the person consciously or unconsciously settles down to the acceptance as final of what he has been so rudely taught—that ideals and realities are far apart.

A distinction between ideals and realities is not what is here meant by a distinction between a physical phenomenon and a psychical phenomenon. Metaphysical or technical psychological discussions are foreign to the purposes of this book; and yet an effort must be made to make this distinction clear, not exactly nor scientifically, but sufficiently for the purpose of conveying the meaning here intended.

A physical phenomenon is one which has actual existence in an external world, including man's own body, and which, as a fact, is capable of be-

ing verified by other men. A psychical phenomenon is a fact which has existence in consciousness only, and may not be verified by other men. One man may find that his psychic content is like some other man's psychic content, but no verification is at present possible. All verification is through physical channels, and is, therefore, a physical verification of physical processes, and not psychical at all.

In psychical content mankind demands that a sharp distinction shall be made between what corresponds to physical phenomena and what does not. All that which corresponds to physical phenomena in having or having had its counterpart and source in that world of physical existence is called real, and worthy of credence; and all else is called unreal, and relegated to the realms of illusion, hallucination, and fancy. Then from the present point of view of average culture a clear distinction between a physical fact and a psychical fact is essential to a distinction between valuable and worthless psychical facts.

The world asks to-day of a man, not what he thinks, but what he knows; and rejects his knowing unless it has its basis in a doing which other men repeat and verify. This is thought to be true of the average state of our American life to-day; and it is into this average state that our children are born, and for which education ought primarily to fit them. This requires that a child's thinking be grounded in doing, and that his psychical world be built up from contact with worthy physical realities.

All physical realities are, in last philosophical analysis, expression of psychical realities ; but the process by which a given individual's psychical world is built up suggests that, whatever may be the actual story of evolution, the true genesis of either physical or psychical fact, the physical precedes the psychical as its immediate stimulus in the human being of to-day. If this be true, physical phenomena are not only those which are of the most immediate concern and interest to a child, but the only point for a rational beginning in the process of education. Certain elementary physical facts are the foundations of the content of most phases of learning, and with these study should begin. An adult who is totally ignorant of a subject is not set to learning it, indifferently, at any point, but at the point of simplest, most elementary—that is, most fundamental—phenomena ; and the same rule would apply equally to the child.

The simplest elementary phenomenon or series of phenomena on which a given subject is based are always inclusive—are some sort of a whole. It is a fundamental fact in consciousness that sensations and perceptions are units. No matter how complex they are in original structure, in themselves they are felt or perceived as units or wholes. As the mind is piqued, baffled, and ill at ease when a partial view of an object or phenomenon is had and only a whole view can satisfy, so peeps at facts, unrelated to some known whole, produce mental unrest, and finally mental ennui and disgust. It is like travelling a road

with continual expectation of arriving at some resting-point, and never getting there. Mental unrest is as pernicious as physical, and to a child it is destructive of normal growth. At each step a child should have some whole within his grasp to which he can relate what details he gets. If that given whole can be that which, as boundary, defines the limits, or as centre makes the unification of that special study for all men, so much the better for the child.

One illustration will serve to show what is meant. Before teaching a child about varieties of rock, or characteristics of a given rock, he should be led to a conception of rock as distinguished from other objects. As soon as this conception is assured—most children of six years have it sufficiently defined on entering school—the child should be led to some conception about the size of the earth, and to think of it as a ball of rock, with an exceedingly thin cover of soil over the rock. Thereafter, when a rock is studied, that rock will be thought of as a bit out of the superficial mosaic of the great ball; and the place in that mosaic whence came the given specimen under study should be made real to the child by proper devices—use of globes, maps, pictures, drawings, modellings, and in imaginary journeyings.

This chapter is meant to add to the fundamental basis which was enunciated in the first chapter, the following as corollaries:

The content of knowledge and not its forms of expression should be the objects of study.

Of this content, that which has embodiment in physical reality should take precedence of that which has psychical existence only.

This content should at first be presented in certain great inclusive wholes, to furnish the proper bases for the true co-ordinations and associations of details.

### III

#### EFFECTS OF STUDIES

THAT to which an individual habitually gives attention makes up the major part of his consciousness and largely determines his conduct. This realm of habitual attention is each man's world of realities. This much is a fairly constant quantity, and is separated from the minor portion of consciousness by this element of permanence and by trust in it as tangible, while the minor portion is a fluctuating element, less strongly grasped, which may or may not be thought real.

Some facts in this major portion of individual consciousness are the same for all men, some are peculiar to men of certain trades and occupations, and some are shared by a still smaller number.

The full content of individual consciousness varies from man to man, not in quality only, but in quantity; but that individual content which in quality and quantity is presumably great must be a very small unit when compared with the full content of human consciousness at any given point in time. This discrepancy between the full content of human consciousness—provided that one being could possess and grasp that full content—and an average individual content suggests

that some notion as to what ought to be found in an individual consciousness is a fair subject for educational discussion.

Either the universe is without order and design, or the past growth and present content of human consciousness are of vital importance to all men. It is a marked feature of individual consciousness that it drops from sight unused elements, and keeps carefully in view what is or seems of use. If there *be* order and design in human development, the *is* and not the *seems* is the right word to use in the foregoing sentence. Granted the *is*, it follows that what is now in human consciousness is there because it has been of use. If there *be* order and design, it follows that those elements in consciousness which are capable of the most service to the greatest number of men whose individual content is relatively largest would, in the long-run, yield most service to all men. This would imply that a theoretical content—made up of the like elements of individual content, of the minds of men who have had greatest opportunities—could be mapped and made a basis for educational work.

Also, if there *be* order and design, the more useful elements are those which have been longest preserved, and for the use of which nature has provided the most elaborate human mechanism. So far as science can speak with authority, each individual content is limited: first, by the perfection or imperfection of the physical body, especially of its nervous system and organs of special sensation; and, second, by the amount of skill

with which this physical mechanism can be used. This skill depends, primarily, not so much upon use, *per se*, as upon the methods pursued in use. Through the methods of using this physical mechanism, each man comes into, or takes, conscious possession of the content of his consciousness; and all processes of education are processes of building or changing such individual content.

If the human mechanism play such an important rôle, an examination of it may do something towards giving that theoretical content. An examination of the chief courses of study which are offered in universities; of the books which have been preserved from age to age; of the occupations of men which most conduce to the enlargement of individual content—these taken with a study of the physical mechanism ought to yield a fair approximation to such a theoretical content as would be in harmony with the general order and design of human progress.

It is no part of the purposes of this chapter to furnish such a theoretical content; but here, in passing to other topics, to point out the need of one. The topics under present discussion are the facts that the content of an individual consciousness, whatever be its quality or quantity, constitutes for its possessor his world of realities, and bounds his possibilities of the understanding of, and sympathy with, his fellow-man; and that the major part of that content is due to habitual attention, and hence comes under an educator's responsibilities.

Habits of attention are products of will. What



a child does, he must attend to; and what he attends to inevitably calls forth exercises of will. Attention itself may or may not be a conscious act of will; but it readily passes into such, and always does so when prolonged. Then the major part of a man's consciousness—that which he now has power to respond to—is a product of the past deeds of his body and mind.

What a child does either through spontaneous or acquired acts of will fashions, day by day, that which he will be and will have power to do. A stimulus to which no past act of attention and will has responded will probably find him indifferent, and may find him insensible.

That all indifference and insensibility have these sources is too much to claim in the present state of psychological science; but that they may be largely traced to such sources is a matter of every-day experience.

Ten men look at a landscape. One sees its commercial value as a land speculation; another, its agricultural possibilities; another, its desirability as a country retreat; and another, its sporting facilities. To another it is a paragraph in geological history, or the habitat of certain species of fauna or flora; while to an artist, a poet, or a philosopher it suggests quite other conceptions. The landscape is the same: each man responds to its stimuli according to the content of his individual consciousness; and for each, that to which he is not responsive is non-existent, has for him no reality. Could one consciousness blend the ten into one unified whole, the landscape would

be more perfectly seen; and that one consciousness would be greater and more serviceable to its possessor than any one of the ten.

Let him who has a comparatively full content try to realize the state of one with a meagre content, and ask himself if *unconsciousness* of such a dwarfed, rudimentary state is any compensation for its possession, or any reason why he should be willing that it continue in his fellow-man. The wistful look that not infrequently comes into the eyes of ignorant men in the presence of knowledge, whose presence they dimly feel but may not share, is an appeal for possession of a larger share of that full content of human consciousness to which all are presumable heirs.

Ignorance of wholes, of great underlying conceptions, bars a man completely from sympathetic association with general fields of study. Given the wholes spoken of in Chapter II., their possessor may touch with intelligent appreciation men of varied occupations and interests; while without such wholes, some knowledge of details leaves him to endless blunders and such a superficial general outlook as repels all who are not equally superficial. A man who has a few details only continues in a state of illusion about the relative amount and value of his knowledge, and often fails to comprehend his limitations.

Largeness of content is not necessarily fulness; fulness implies depth; and it is depth of content which the wholes give. The detachment of idea from the special facts of physical detail, and the lodgment of it in a law or principle, is what gives

most fulness and meaning to any content. In Chapter II. an effort was made to show that educational processes should begin with the largest wholes which can be grasped, and that at every stage these wholes should precede much detail work.

In so far as the historical genesis of laws is regarded, this order may seem unscientific; but it needs only to be pointed out that a law starts as an hypothesis and is proved by detail afterwards; that the hypothesis is framed, not only because there are details to be unified, but because some mind has been able to grasp and to deal with a mass of details as a unified whole; that hypothesis and laws are the rightful inheritance of all who can grasp them and use them as bases for thought and conduct; that the mind naturally takes in units with utter disregard of their complexity; and that to deny a child a psychical whole of large dimensions lest it hurt his mind is as fundamentally foolish as to deny him a view of a whole landscape.

From the foregoing it may be presumed that the major part of that theoretical content which should help to guide a teacher's steps would be largely made up of such concepts as give the main, simple outlines on which, and within which, are built and included the most interesting and serviceable phases of human learning.

This view of human need deprecates all schemes of education which seek, primarily, practical adaptations to given environments. Such schemes of adaptation are certainly necessary; but the consid-

eration and application of them, from this point of view, naturally belong to the age of specialization, not to the beginnings of education.

Granted that some portions of civilized communities are so unhappily conditioned that such so-called practical schemes of education seem necessary as the beginning and end of education for them; it is not for a moment granted that such a reversion to the savage ideal of education should be acquiesced in or tolerated as a good thing in itself. It should be the aim of the educator to assist in annihilating these centres of barbarism by claiming for children who are so unhappily placed the elements of a liberal education before subjection to the yoke of a purely industrial training.

By these elements is not meant a superficial smattering of a few details, but that grasp of underlying concepts without which much learning is of the dictionary and scrappy encyclopædia order, and with which a little learning—details of such number and quality as to give some grasp of wholes—is a liberal education. It is not so much the quantity as the quality of mental possessions which differentiates the cultivated from the uncultivated.

The content of consciousness, as content, is but one half of life; and habitual attention does as much to determine the other half—the application of that content to action—as to furnish the content itself. Content and conduct continually react upon and reinforce each other, and to the teacher one should be as important as the other.

That quality of conduct which is fostered in childhood tends to maintain itself in adult life. The principles underlying that quality, or the reasons for their application to a given case, may not enter into the consciousness of the individual, or be so vaguely understood that no other account of them can be given by him than that a feeling of interior necessity forces him to act so and so, and by the friends of the person that the given conduct is consistent with his character.

What character is, in ultimate essence or foundations, this book does not attempt to define; but that, as men realize it in themselves and see it in other men, it is largely a result of co-ordinated lines of habitual action is probable. We are dealing here, not with action as action, but with the qualities of action—that which makes many varied actions alike in intrinsic excellence, as good or bad.

There are two qualities of action that seem to be conspicuous and to have stood out as conspicuous in all times—selfishness and unselfishness. Much praise has been bestowed on the latter quality, and much blame on the former; while the actual conditions and needs of human society have often been overlooked. Those conditions seem to demand, and they certainly pay a premium on, self-assertion; and, at the same time, teachers, secular and religious, and most moralists have made self-abnegation and self-effacement the highest ethical virtues. Thus the ideal aspiration and the practical necessity are ever at war.

This war seems to have been accepted as inevitable, a part of the dualism of good and evil that cannot be got rid of. Men have already advanced to the state of regarding physical war as barbaric, and expressive of a rudimentary condition. It remains for them to advance to this state with reference to the psychical life; and to see that conflict between ideal aspirations and real practical necessities is also barbaric and rudimentary.

The practical necessities may or may not be changed; but as they are, they can be so examined as to give some sort of principle to guide one's yielding or resistance to them. The same is true of the ideal aspiration; and it is possible to discover some principle which might so adjust the relations between the two as to make it a balance: so that peace and arbitration could take the place of war, and the rudimentary barbaric stage pass from an individual private life, as it is passing, as a *sine qua non*, from public life.

If an inner psychical reality precedes all outer physical expression—function being more and prior to organ, as scientists are beginning to affirm—it follows that an adjustment of the forces within a man must precede such adjustment without; and that war will pass completely from public life only as, or after, it shall have passed from the inner, private life of individuals. Traced back to the individual, it has become a fit subject for educational discussion.

What can save an adult from being torn between aspirations and necessities? Nothing but

such a habit of thought and feeling as makes such war foreign to his nature. Shall necessity be put first, and the child taught to smother what tends to its neglect? This is the so-called world's way, which the majority of men follow and society applauds. Shall aspiration be put first, and the child made to feel that to lower or to change his ideal is ignoble? This is universally taught and rarely practised. To so teach a child or youth that, as soon as practical life is reached, he must either kill his aspirations or be himself killed by his necessities is to bring about one of three evils—to smother the aspiration or the necessity, or live in a state of war.

If life means anything to a man, its value is presumably in proportion to its length, unless length be itself conditioned on quality. At least, few will quarrel with the notion that the value of a life is in proportion to its quality; and that the more of a superior quality a given man experiences, the more valuable he is to himself and to society. In this latter sense, value may be conditioned on length.

Prolongation of life is, then, one of the necessities of an individual; and as most of the so-called necessities minister primarily to prolongation, it may be said—bearing in mind what is said above about quality—that prolongation includes all other necessities. Hereafter, in this chapter, necessities will mean the prolongation of a life of presumably the best quality possible to its time and environment.

A discussion of the necessities and values of

life will form a part of the fourth chapter, and for the purposes of this chapter the above assumptions will be taken as granted. Without further discussion, it will be also assumed that in the present social state such prolongation, or the satisfaction of the necessities of human existence, cannot be maintained by conduct which follows purely altruistic principles; that a man cannot neglect these necessities without lessening the value of life itself; and, furthermore, that he cannot, if he would, set aside or neglect these necessities without committing suicide on some phase of his being.

Then, for war to cease and a balance of peace to be maintained between necessity and aspiration, the latter must change or be differently regarded. To regard a given aspiration as of no value is a self-contradiction; it is no longer an aspiration.

In passing, let it be pointed out that to be taught one thing in youth and to be obliged to practise another in manhood is to beget the habit of regarding ideals as unattainable, and to be responsible for the impotence and lethargy of men in the presence of national, municipal, social, and domestic needs for reform.

It is to the ideal itself that the question is now brought; and some examination of the two chief qualities of action is the remaining object of this chapter.

Self-mutilation is regarded as evidence of fanaticism or insanity; and conscious, deliberate self-mutilation would be regarded with horror by all



right-minded men. This instinctive feeling has, unfortunately, come fully to consciousness with reference to the physical life only. That it is coming to consciousness with reference to the psychical life is evinced by certain educational and social efforts. Compulsory attendance at school, libel, and kindred laws are in evidence; but as law usually lags some decades behind public opinion, it may be inferred that there is a good deal of consciousness about the wrongs of psychical starvation and assault. But the school law is often put on general rather than on individual grounds. A child should be educated that he may be a law-abiding citizen, worth something to the state; it has not yet come to consciousness that a man is worth something to himself.

When famine sets in and body-starvation is conspicuous anywhere on earth, Christendom arises and gives alms, while there is comparatively little concern over the fact that psychical famine is the chronic condition of two-thirds of the human race. When massacres or other physical atrocities are committed in some obscure corner of the earth, most civilized men rightly consider it every nation's business to make an effort to put an end to these atrocities; and still, the world over, psychical atrocities are so common as hardly to excite comment.

It is individual responsibility that makes national responsibility; and only when the individual ceases to be cruel to himself will cruelty between men and nations cease. It is this cruelty to self, this barbaric self-mutilation on the psychi-

cal plane, that seems so desirable to bring to birth in consciousness.

Most psychical mutilation is at present unconscious because men have not come fully to consciousness on the psychical plane. It is the especial business of education to bring consciousness to itself on this psychical plane, and to furnish principles and habits to guide its conduct on that plane.

And herein is the most difficult point of this discussion—to express the main idea of this part of the chapter without an exaggeration that shall condemn it. The doctrine of self-sacrifice as commonly taught and understood is pre-eminently the doctrine of psychical self-mutilation.

Upon that child in whom racial instincts are strong, the physical life gross, and the psychical life comparatively weak and unconscious, the doctrine of self-sacrifice makes but small impression; but upon the sensitive, delicate, highly wrought product of our finest civilization, it tends to make lasting impression, if it make any at all. It is these generous, high-minded children who should be protected from the abuse of a principle which they easily absorb into habit, and which, unchecked, often leads to a permanent dwarfing of life.

So far as the span of human vision goes, losses are not made good, bread does not return; and it is as foolish to say that to stop the development of a capacity will not mutilate the mind as that to put out an eye will not mutilate the body. Time and opportunity come: he that uses them

reaps the fruits of them; he that gives them away must not only expect to see his neighbor reap those fruits, but himself to be permanently impoverished by all which that opportunity might have yielded to him.

The relations of the individual to the social whole will be touched upon in the next chapter: it is his relations to himself that are here under discussion; and the following will now be given as fundamental principles of right conduct towards one's self:

My neighbor's right is no more than my right. What his right is, let his own capacities and desires determine. What my right is, let my capacities and desires determine. He shall not choose for me; I shall not choose for him. The one inviolable limit between us shall be, that he shall take nothing from me which I need and can rightly use; and I shall take nothing from him which he needs and can rightly use.

If this principle of power to use were inculcated in children, and they were forbidden at home and in school to give away any sort of opportunity which they had, or could make for themselves without taking what was already held by some one else, a habit of responsibility to self for the use of opportunity would bring about a fuller development of individual capacity, and so the value of life to the individual and to the social whole would be increased.

There are varied ways of using opportunity, but an application of the above principle would forbid one individual to sacrifice to another any-

thing essential for the fullest development of his own being, or to accept such a sacrifice from another. One may properly sacrifice himself to the state or to some social whole; but such sacrifice would ordinarily not come to consciousness in youth. Use of opportunity is not abuse of it, nor the holding and hoarding of what cannot be used; so that the miser of opportunity is as reprehensible as the spendthrift of it. The gluttons and misers are wholly, and by intention, left out of this discussion.

The chief application, then, which the principle of self-sacrifice could have for children would be interior and individual—the sacrifice of one class of desires to another. In this interior realm the principle would hold good until psychology had advanced far enough to show how to form such a group of balanced desires that a sacrifice of one would be a mutilation. This points to an ultimate, entire abandonment of the principle as now commonly taught.

As for the opposite principle—that of selfishness—this chapter may be thought to be given wholly over to its expression; but if that be the impression conveyed here, it is hoped that the next chapter will correct that impression.

The ideas thus far presented suggest that the war between aspirations and necessities finds its ultimate occasion in the holding of pernicious ideals; and that the balance so much desired can, in the present social state, be achieved and maintained only by adapting the aspirations to the necessities, at least during the period of youth.

The purpose of this chapter is intended to be as follows: Whatever choice of studies and methods is made for the governance of a child's education, that choice largely determines the content of his consciousness and the presumable lines of his conduct.

#### IV

#### ENDS TO BE SERVED BY STUDIES

THE necessities which were mentioned in the last chapter it is the object of this more fully to elucidate. To satisfy those necessities nobly is to make of living an art; and in this chapter it is proposed to treat of life for its own sake, as an art.

Art is the perfection of the application of means to worthy ends; and means here includes human thought and energy, as well as external tools and appliances. Living, then, as an art requires a consciousness of and a capacity for the use of means to worthy ends; and it is that consciousness and capacity which are the duty of the educator to develop and train.

No man can be conscious of that to which his attention has not been directed, nor exercise a capacity which he is unconscious of possessing; moreover, to be conscious of a thing, and to realize that thing as important, are two states; and it is a sense of the values of an experience or an opportunity which should be awakened in a child.

The ends of life may be said to constitute its being, that which it is in itself; and the application of means to these ends, its expression. Be-

fore expression, comes that which is expressed ; before the means of living, the ends for which we live. In the various aspects of man's being are found that without which existence, as we know it, cannot be maintained ; and the preservation and perfecting of those aspects are the necessities, in which is the prolongation of life, which were mentioned in Chapter II., and which, since life itself depends upon them, may be taken as the fundamentally worthy ends to be pursued in making of living an art. To question the worth of these ends is to question the worth of life itself. We are : and it is here assumed that the fundamental necessities of life constitute ends than which none worthier can be conceived, or made the objects of education.

Man is, first of all, a physical being, surrounded by a physical environment—first of all, not necessarily because man's being begins in his body, but because without the body little is known of his being ; and all other aspects during the years of man's existence which are known to us are dependent upon this one.

For more than twenty centuries man's body has been studied, and still imperfection and debility are common. During all those centuries physicians have abounded ; and yet, to-day, there are no simple, sure rules for the preservation of the body from youth to age. This hoary uncertainty tends to make one timid, even about theorizing ; yet some attempts in this direction seem necessary to this discussion.

Negative reasons are apt to be neglected ; and

it is the negative aspects of man's physical needs that are the more frequently emphasized. "Do this in order that you may not get ill" usually ends in "Do this because you are ill," so quick is man to neglect the coming of an evil day until that day is upon him.

To teach a child to pursue certain lines of conduct and of care lest something which he has not experienced, and so has no consciousness of, shall come to him is to imagine that the order of nature can be reversed. Man understands that which he has experienced, and very little more; and it is sheer waste to try to filter experience through a child's thought. He gets nothing abiding by that process; and what he cannot immediately be made to experience in action will make small impression upon him.

Then, to make the preservation and perfecting of his body an abiding end in his consciousness, he must in some way be made to feel the worth of that which does preserve and perfect it. To put a child through a course of illness, or to take him day by day to hospitals in order to make a sufficiently vivid impression of the horrors of illness, would be a way of acquainting him with illness, and to fill his mind with apprehensions and fears; but it would do nothing towards teaching the avoidance of such misfortunes.

Training similar to this is common in all departments of life; and it fosters that negative attitude which makes of existence a series of escapes from peril. Fear is not considered an ennobling quality; and, in itself merely, escape from peril is



not supposed to indicate high powers or to be a worthy end of effort ; yet children live in this atmosphere of fear and peril from babyhood up, at home and in school.

Let us now turn life around, take it up from another side, and see what it will yield about this physical aspect of man.

A child grows. What makes him grow ? Nourishment, activity, and sleep—the expenditure of energy and the replenishing of energy. Replenishing is not necessary without expenditure ; and here is the first lesson to be impressed. He does something : he expends energy ; therefore must he eat and sleep. This is of external action and food. The next step is finer. His heart throbs, his blood flows, his chest heaves : day and night, waking and sleeping, something within him works ; and that worker must have supplies of energy. Then show him the replenishing which is always going on, and lead him from that fact to infer its importance.

Do not expatiate on the impurities of indoor air, nor the evils of tight clothing ; lead him to love outdoor air, and to take deep, full respirations ; and the impurities and clothing may be left to his own instincts.

Later, he should be taught to understand these instincts, and to know that his outflowing breath is excreta which should be regarded as other excreta are, and its retention in any room be provided against, not because retention will produce disease, but because retention is filth.

There is a third, more difficult step to which

mankind has paid little attention. The human skin throws off excreta. Take a child to the country and turn him loose in meadows and woods with nothing on but a single slip, like the simplest Greek tunic. Give the child six months of such life, and the common, close-fitting garments will produce a sense of intolerable suffocation. Also, let the tunic be light-colored. Plants will die under black covers and go on thriving under white ones; and it is a fair inference that the color of human clothing is fit subject for experimentation.

To know such health and vigor as may fairly be said to constitute a worthy end of life, the child must possess them, and for so long a period as to have them so identified with self that deviations will show themselves in consciousness and be remedied at once. If well taught in childhood, these remedies would be sought in an examination and readjustment of the fundamental phenomena of the physical life—the expenditure of energy, the excretion of waste products, and the replenishment of energy.

Most children grow up so acquainted with, and educated into, tolerance of small ailments that these are unnoticed until their cumulative effects have produced serious acute diseases, or chronic, organic lesions. The opposite is here urged: training into such a condition of health and vigor as makes a slight disturbance noticeable, and removal of cause as instinctive as to withdraw the hand from a pin-prick.

There are two ways of stimulating growth:

one is by bringing about a realization of something to grow to, and the other is by bringing about a realization of something to grow away from. The former is by power of attraction, the latter is by repulsion; the former is by consciousness of perfections to be attained, the latter by consciousness of ugliness to be avoided. Give a child the former and he will be so sensitive to the latter as to recoil. What is said of attention in Chapter III. has application here. Habitual attention determines reality; and if ugliness of all sorts were the most desirable reality, then only would the philosophy of training by repulsion be justified as an educational factor.

Would that there were anywhere, in any land, a school and environment where, from two to eighteen years of age, a child might live without seeing a deformed thing, knowing of a sham or illusion, or feeling the power of a repulsion! Incompleteness is not here meant as deformity, nor any steps in the process of normal growth, but those malformations of life and character which make tolerance of defects in body and mind a daily virtue.

The greatest stimulus to perfection that the physical aspect of man's being has, is found in its environment. Make a child feel and respond to that stimulus. To know nature intimately, and to be equal to her at every point, has been the effort of man for ages. Let a child see this, and try to understand where man has succeeded, where failed, and why he has failed.

Let the child begin with the more common phe-

nomena—the changes of the weather. To try to respond, to react against these as do the birds and squirrels, will be a lesson which no child will forget. To enjoy a walk against the wind, to take delight in whirling snow, to feel the glow and tingle of reaction against fierce dry cold, to get wet through in a summer rain—these are experiences which a child should repeat year after year, until he feels himself more than equal to anything which nature offers for his strength to overcome.

Such experiences as these the city child can have; but the country child has, besides, forest depths to penetrate, mountains to climb, rocky caverns to explore, streams to follow from source to mouth, and many other advantages. When means of transportation are sufficiently great and cheap, it is to be hoped man will return to ways more wholesome for children—live in villages, and let cities dwindle to mere distributing stations of a nation's products.

The intellectual aspect of man's being constitutes an object whose preservation and perfection are a second worthy end in the art of living.

The dawn of self-consciousness in a child may be considered the birth-hour of this intellectual aspect. From that hour he has an intellectual life as truly as he has a physical. The adult consciousness vibrates between a general consciousness which is diffused over many objects or is absorbed in an action, and a consciousness of self as something apart from those objects and actions. This vibration is the basis of all thought; and so

soon as self stands in consciousness as something apart, a self to which the "my" consciousness belongs, thought begins; and every process of identification of an object as a not-me or of an action as "my" action is a process of thought.

How early these thought processes begin is not known, but probably within the first year. Whether a child ever has a diffused consciousness which makes no distinction between self and not-self is a question for the psychologist; it is here desired to point out only that the intellectual life as such begins very early.

Analogies may be faulty and misleading; yet to the writer there seems no better way of treating this intellectual life than by pointing out certain analogies to the physical life, which are plainly shown in adult years, and may be presumed to hold equally good in childhood.

All people who have had much intellectual experience know what intellectual hunger is, and that it is as imperative a craving as is physical hunger; also, such people do not often mistake intellectual activity for intellectual nourishment.

The expenditure of energy in, or by, the physical body is not replenishment, but exhaustion, of energy. Expenditure aids growth, because by the process of destruction it makes demand for the processes of construction; and if the supplies for reconstruction are at hand, the recuperative processes go on rapidly—the body is renewed and enlarged: yet those processes of destruction are but one half of the whole vitalizing process of life; the other half is the upbuilding, reconstruc-

tive processes which require the ingestion of new material.

Comparing the mind to the body, it may be said that intellectual activity alone is no more intellectual nourishment than physical activity is physical nourishment; and that activity without nourishment, or an inadequate amount, will produce similar effects in these two aspects of being.

It will now be assumed that the fundamental processes of the physical aspect of being have their counterpart in the intellectual aspect—expenditure of energy, excretion of waste, ingestion of new material, and processes of construction. These four make two groups—the destructive, eliminating group, and the intaking, constructive group. Perfection in the physical life depends upon the adjustment of these two opposed groups of processes; and it is assumed that perfection in the intellectual life is found in the adjustment of a similar balance.

To keep a child sufficiently active, so that the destructive forces may keep up a continual activity of the constructive forces in his body, he is provided with various stimuli to activity in the shape of objects to manipulate, places to go to, etc. These may be called the means or tools of his activity; and if they are wisely chosen, they may serve to train physical powers to such skill and care as will be needed in later years. But these appliances to activity serve the destructive forces directly, and only indirectly the constructive; they can in no wise take the place of food.

In like manner there are tools to the intellectual

life, stimulating to activity, necessary to certain processes, but no more capable of serving directly the constructive intellectual processes than are a child's playthings or an artisan's tools capable of taking the place of a physical dinner.

Reading, writing, arithmetic, drawing, as commonly taught and used, are tools pure and simple. To adult non-specialists languages, mathematics, drawing, and much material in all studies are no more than tools. That subject or that phase of detail of a subject which to the average adult is but a tool should be so regarded in the arrangement of educational matter and methods for children.

A well-trained artisan gives tools to his apprentice or pupil so fast only as a beginning can be made in their appropriate use: so should the tools of the intellectual life be given out with discretion.

It is fair to ask, If so much of the common studies are but stimuli to activity and not nourishment, whence is the intellectual life to be nourished in childhood? An answer to this question has been given in preceding chapters: that which nourishes the adult will nourish the child.

Let us return to the physical analogy. Food is taken into the body; it is felt as going in, the taking is a pleasure, and is followed by a feeling of satisfaction. In the body this food is worked over, selections are made, desirable portions are worked up into integral parts of the physical tissues, and all else is excreted.

Such processes as these take place in the mind of every scholar. The child has not the scholar's



power of selection; but often a stronger, more healthy, excretory power. If children were allowed to forget, if their minds were trusted to excrete useless material as their bodies are, this process alone would soon demonstrate what is nourishing and what is not; and what tool the child is prepared to use and what not. In the writer's experience with children, no intellectual tool which the child was ready for and had used in legitimate connection with what was not mere tools was forgotten, either in itself or in its uses. And here a distinction should be made between tools as tools and tools in use. No tool is of value save in its application to some labor; and tools looked at or handled without such application are the mere shows of an idle hour.

This brings us to another consideration which the writer deems vital in the education of children. To no child, even the youngest, should ever be given a mere plaything, either physical or intellectual—an object or story which has not its counterpart and use in adult life. The child should have the adult world in miniature—he should not have a different world; his playthings should be steps in some skill which is of use in the markets of men, and he should be taught to so handle and use his playthings as to acquire that skill. Playthings and plays should be direct preparation for practical life. An unspoiled child is always more interested in real grown-up things than in shams and makeshifts; and what his interest impulsively chooses, that he should have, provided that he has had a fairly large, well-stocked field



of choice. It is the educator's business to provide such a field, and to guide the impulsive choices, not by inhibitions, but by appeal to new attractions.

There is a limited range of living physical objects that are fit for human food; other objects and phenomena are either useless now or are means of external activities. Without desiring to push the analogy too far, the same may be said of intellectual objects—the vast majority are means of activity, and not food. There are intellectual structures that are dead, and from them life can no more flow than can a fossil tree bear fruit. The physical life rests upon to-day; it were better if the intellectual did also. In the knowledge, the thought, the vital, moving, intellectual life of our day and time is the best mental pabulum for our children.

A thing is not dead because it has lived in the past. There are intellectual trees which have borne fruit for centuries, and the seeker of to-day finds them still alive and their fruit nourishing. It is the dead and fallen that should be allowed to decay and pass from intellectual sight.

What was said earlier in this chapter about the positive and negative means of development applies here also. That child who is nourished on real science and good literature will have finely discriminating intellectual sensibilities and a strong intellectual life, and will instinctively avoid intellectual trash.

Also is there this great similarity between intellectual nourishment and physical: that which

is good may be selected and stored until such time as it can be used ; so that which is given to the child to-day and which may apparently remain forgotten for years may not be excreted, but saved until the day of its need. The intellectual activity required to memorize a jingle from *Mother Goose* may be as great as for a fine passage from Shakespeare. The former is a useless bit of husk ; the latter, an everlasting sustenance.

If nervo-muscular arcs, brain paths, and grooves of habit mean anything, they condemn as imbecile the education which occupies the child's mind with what is avowedly trivial and transient, but which these arcs, paths, and grooves make permanent qualities of the intellectual life.

Every child is born into some social environment, and is therefore a member of some social whole. A recognition of this fact, an understanding of what it involves of personal right and of personal service, a feeling of what social life is, and what social ostracism or social suicide means to the individual and to the social whole—these are necessary to an intelligent preservation of, and effort to perfect, the social aspect of being as an end of human existence.

In a child this social aspect may, perhaps, best be brought to consciousness by a comparison of his social whole to his own body. The foot supports him and does his walking, the hand brings and carries, the heart pumps the blood. Each part which the child can feel or voluntarily move has some use, does some labor which he, as a

whole, needs for his well-being. From these parts to the microscopic cell is an easy step for a child's imagination, provided that the step be properly prepared for by instruction and illustration, with the microscope, of what cells are and of their relations to the tissues and organs. A comprehension of the cell as the unit of the organism, of its individual labors, and of these as making up the various organs that themselves compose the body—this can be given comparatively early.

The child might then be led to see that a cell which did not take care of itself—replenish its own waste and rebuild its own walls—would be a burden to other cells, if for no other reason than that it left a weak spot in the chain of continuous life and movement; that one which took care of itself only, and refused to make effort with its fellows for the common good, would likewise interrupt the continuous life movement and so be a weakness.

If there is no food to be taken, the hands cannot fill the mouth and the stomach be provided with material to digest; if the blood is poor, or a cell is shut off from contact with its flow, that cell cannot take from the blood what is necessary to reconstruct its worn self and to make stores of energy to be used for the common good. An examination of the various parts of the body reveals that everywhere there is an equality of health, of sustenance, of physical well-being. There are differences as to quantities and qualities of labor performed, but no difference of individual comfort and apparent content, and no sane

person would consciously neglect to preserve that equality of individual well-being.

A series of lessons, about which the above is intended as no more than a suggestion, belongs to the first topic of this chapter—the physical body as an end of being; but each step in such a series is a step in the process of laying a foundation for the understanding of social relations.

A man is to his social whole what a cell is to his body. By right of being a part of that whole, that whole should provide means of physical comfort and well-being; he should so use those means as to keep himself an integral unit, and to be provided with stores of energy which he should freely give forth whenever the social whole needs them. To work with and for his fellows should be an instinctive, spontaneous part of his being's impulses.

There is a more vital connection than that of labor and responsibility for labor—there is the continuous life flow, the continuous disturbing and readjusting of the balance between the forces of destruction and of construction, a change and a movement within and among the parts which compose the whole. To make the social whole strong and able, to put no limit to the flow of life within it, no unnecessary weight on either side of the balance—this requires that the individual unit feel the social whole as himself.

Only in the disease of the human body does one part take upon itself the labor of another part; so in a healthy social whole, that member would be of most value who, developed to fullest

capacity, should abide in his own place—presumably the largest place which he has capacity to fill—and there use his energy in the particular way for which he is best fitted.

Equality of physical well-being there should be in every social whole, and in humanity as one whole; but equality of labor or of position, of association or of environment, of amount and quality of possessions, or of capacity to know, to do, and to enjoy—these can never be; and every child should be taught to comprehend this great fact, and to accept it cheerfully.

A natural criterion of honor and dishonor in labor and position is found in capacity, and by capacity here is meant the entire quality of the man as a whole. The criterion of honor and dishonor in labor itself is found in its value to the social whole. These two criteria—the worth or worthlessness to the social whole of a given kind of labor, and the relative fitness of a given worker to discharge a given labor—these should be instilled as the chief elements of degradation and of honor. To occupy a position which one cannot fill, to shrink from taking a place which one can best fill—these are equally dishonorable; for they cheat the social whole of its rightful meed of individual service. To have a position which is of value to the social whole, which uses all of one's capacities without exhaustion, and into which one fits happily without worry or strife—this is to have an honorable position.

This does not mean that a shoemaker's son must follow his father's occupation. The first

duty of a youth to himself, and of a state to its children, is such individual development as tests the presence of inherent capacities and brings them forth to conscious use; and only when this is done can an individual's place in the social whole be adequately determined, either by his own choices or by those of his fellow-men. Such development would in time raise the general level of capacity; but it would not therefore leave any phase of labor lacking its laborers. It would increase the skill brought to bear in a given field, and so elevate the field itself, until all loathsome and unwholesome forms of labor were performed by machinery or made less noxious.

These far-away, Utopian conditions seem not impossible of being brought near and made actual, through a proper education of youth from childhood up, in this social aspect as an end to be consciously pursued.

The next aspect to claim attention will be called, for want of a better term, the human aspect. Beyond and including each individual's limited social whole is the human whole. To serve the human whole indirectly, by aid in perfecting some limited social whole, is possible to all; but to serve it directly is possible to few. Those who advance knowledge, those who apply knowledge to increase the general well-being, those who produce masterpieces in literature and art, and those whose conduct makes a conspicuous example which is worthy the emulation of men—these are they who serve the human whole.

The child should be taught to reverence this

human whole, and all who have conspicuously served it. To serve it should be no part of his expectations; for he who has best served it has done so unconsciously, or by choice of his fellow-men or of circumstance, rather than by his own choice or will to render such service. To each child such an eminence is possible: it is not probable; and if it come its recognition is apt to be long delayed. Let a child know that something which he may do may prove of value to the human whole, but that he may not hope to know of it in his lifetime; for many an apparent service time discounts, until in a subsequent age nothing is left of it.

Yet is this human whole the greatest tangible aspiration or end of being which a teacher can at present give to a youth; but, for the most part, he must be content to feel the human relation—to feel the human support and care over himself, and to return to the human need his modicum of service—these he must be content to receive and to give through his limited social environment.

Besides these four aspects—physical, intellectual, social, and human—there are two more: a subhuman and a superhuman.

By the subhuman aspect is meant that tie of descent which binds man to all which in form and consciousness is supposed to be below him. Each man is bound by a recognized responsibility to his immediate human parentage. Whether such a tie of responsibility can rationally be set up between man and that lower world in which



he is supposed to have had his genesis, and which as a stream of life has flowed down the ages beside him, is a fair question.

That living stream is here: in it and through it man's physical being exists. It is now, not once and remotely, but now the immediate, indispensable purveyor to man's life. What does he owe to this purveyor? It is a living thing: scholars are beginning to hesitate about denying consciousness to the lowest living cell; and a few ask that the supposed gap between the organic and the inorganic be closed—because, say these few, that gap has existed only in man's imperfect thought—and life be granted, and with life consciousness and an intelligent use of means to ends, to the long called dead but really living crystal world.

If this subhuman stream be living, conscious, and intelligent—after its kind—should not man refrain from wanton ruin, useless death, and senseless cruelties? May not man take what he needs gently, and should he not desire to return to the great stream as much as he takes out; return, not for his own sake, nor out of regard to his human successors, but from desire to be honest, courteous, and helpful to the stream itself, fountain of and purveyor to his own existence?

It can be imagined that a people whose children from infancy had lived in such an atmosphere of feeling towards this lower living world, and had been educated to regard its well-being and happiness as necessary to itself as well as to humanity, would, in a single generation, do much



to change and to renew the natural features of our great mother earth.

Man's relations to this lower world have been merely those of slave and master; between these relations he has vibrated. Has the time not come when both may be supplanted by that higher relation of friend, and a child be taught what that friendship must mean to himself and to that world?

If man's life has its genesis in more rudimentary states, why regard it as a completion? If this lower world is its foundation, why regard man in this present physical environment as anything more than the four walls of a single story, without even a fixed roof? Has not man in all ages aspired to something which he is not, and which cannot be realized—at least, has not yet been—in the forms, conditions, and environments with which we are familiar? Why think other environments and conditions impossible? Perhaps these exist now and here, but hid by man's imperfectly developed senses. Perhaps man's aspiration is a reaction on a real stimulus which his imperfect consciousness does not quite grasp and tangibly locate.

Of this superhuman aspect of man's being, which assumes as essential to the existence of such an aspect a superhuman environment to which man has relation—of this no account will be attempted. Neither will any suggestions be framed about this aspect as an end for which means must be found and to which applied. That such an aspect *is*, and that some means to its preservation and the perfecting of relations to

that upper environment whence stimuli come to that aspect of man's being—that these *are* is believed by the writer; but in a field where discussion so easily leads to blind passion or dogmatic scorn it is thought best to be silent. It is hoped that the time will come when this aspect of man's being will be put upon the same basis as are the other aspects; will be subjected by duly qualified persons to the same unemotional research; and that the common man will accept the results of that research with the same matter-of-course air that now characterizes his acceptance of the so-called scientific facts.

Until this aspect of man's being can be regarded dispassionately it is useless to hope that justice will be done it, either by the materialist or the religious sentimentalist. The integrity which was spoken of in Chapter I. may be relied upon to preserve the aspect so long as no direct effort to destroy it is made; and certainly educators have a right to protect children against such effort. To let that aspect alone seems at present the wisest way for the teacher. Also, it is doubtful if questions put to children in schools about God, angels, devils, etc., can demonstrate the presence or absence, the quantity or quality, of such a phase of man's being as is here meant by the superhuman. Answers to such questions show the quality of the environment in which the child has lived and are an index of the state of adult thought in that environment, rather than an expression of anything inherent in the nature of the child. The superhuman aspect, if it exist, should

be found showing itself, reasonably free from taint or artificial form, somewhere along the years of childhood, were it not forestalled and spoiled by a too early, artificial, and sentimental bias.

Living as an art, for its own sake, includes the preservation and perfecting of these six aspects of man's being. For these as ends man lives, consciously or unconsciously. It may be presumed that the more conscious he is of these ends, the more perfectly he will adapt to them the means which come to his hand. At present the educational means of bringing these ends to consciousness as ends are mostly reserved for the higher institutions of learning, and even there they are not adequate.

If they be true fundamental ends of human learning, every child, in his measure, has a right to them; and the primal duty of education is to bring them to consciousness in every child.

It is no part of the purposes of this chapter to state explicitly the means by which this may be done—that is, the ends as ends may be known and understood by a child; nor to state by what means the man from childhood to age may attain these ends—that is, preserve and perfect these aspects of being. It is here desired only to point out these ends as worthy ones, whose pursuit makes of living an art, desirable for its own sake; and this being true, that these ends become the guiding lines for all educational processes—an aid to the determination of all subject-matter to be taught, and of all methods to be used in teaching that subject-matter.



### Part III

#### SOME DETAIL ABOUT THE TEACHING OF SPECIAL SUBJECTS



# I

## SCIENCE

“Hast thou named all the birds without a gun?  
Loved the wood-rose, and left it on its stalk?”

THESE lines from Emerson's poem "Forbearance" express the spirit which should guide the teaching of science to children. The curiosity which demands to "see the wheels go round," and that cuts open the doll's body to see what it is stuffed with, partakes more of wantonness and cruelty than of true investigation.

If a college student choose to inject hot wax into the veins of a living lobster, it is supposed that the student knows and accepts the conditions and consequences of the act; but such supposition could not be made about the average child; and it seems not too much to say that few boys and girls under fourteen years of age should be allowed to make experiments which cause suffering to any sentient thing, or to make preparations of living organs or tissues which involve the death of the object.

The mind whose first impulse is to pick or to catch, to transplant or to imprison, to pull to pieces or to cut open—is barbaric. He who has

felt the quick moisture in his eyes at sight of the first wild blossom encountered in his spring rambles, or stopped and remained motionless lest he interrupt the song of a bird in some wild spot, he and such as he only are fitted by sympathies to introduce children into the kingdom of nature.

Our civilization is certainly barbaric in its wanton destruction of all the beautiful things which nature spontaneously produces. We seem incapable of appreciating any wild thing until, nearing destruction, it becomes the prized pet of the gardener. Many an inhabitant of New England and the Middle States will tell of places where once the arbutus and the azalea made the slopes pink with their blooms, where now not a spray nor a bush can be found.

To make the acquaintance of, to try to understand, to have a friendship for, to find out the needs of and to minister to those needs—to do these without destruction is the aim which should animate those who seek to teach science to children.

Hence, do not bring nature to the child, but take the child to nature; and when there let him keep his hands off until he has exhausted the capacities of eye and ear.

Nature in greenhouses, public gardens, and aquariums is not the best kind for children to see. She is then too concentrated, too orderly, too much trained and ruled by man, too tame and too small to make a proper impression on a child's mind. Every year Nature bows her wild spirit more and more to the demands of man, and



moves in grooves which he appoints ; but fortunate above others are they who in childhood have seen her in her vastness, her untamed wildness and disorder, her solitary strength and original beauty. In such condition only can she inspire the noblest sentiments towards her.

To remain in long or familiar contact with such conditions is possible to few children who can have, at the same time, such guidance as to make the most of the opportunity ; but within an hour's railway journey of many a large city in our land still remain natural features in almost undisturbed, primeval grandeur ; and we will venture to say that in every such city enough is wasted each year in municipal carelessness to send the children of every school to these places for at least one day.

Field lessons should be the beginning, and, throughout, the foundation of lessons in science to children in all grades up to the high school.

The object of these should be to acquaint children with nature as a whole, rather than with detached, isolated objects belonging to her ; to give the child general impressions and large, inclusive pictures which may remain as permanent wholes in the child's mind, and to furnish an accurate setting or framework into which minutiae may be placed in due relation and perspective.

These larger wholes should not be vague, undefinable blurs on the child's mind, but should have as definite, clearly marked limits and characteristics as are possible to man's present knowledge. The very blankness and plasticity of the child

mind make it important that the impressions which are made should be accurate. The notion that half-truths, false notions, and slovenly observation are good enough for a child and will be easily thrown off or corrected later in life is an outrage on any reasonable psychology of a child's actual conditions and needs.

An illustration from personal experience may not be out of place here. I had read a few standard works on geology, had done some field work, had taught the subject one year in a high school and one year in a normal school, and had I been asked about my general notions of the subject should have supposed them to be tolerably accurate. Yet one day, on reading an article in *Nature* about the depth of soils in river valleys, I was led to examine my general conception of the earth as a whole, geologically considered, and was startled to find that, without ever having thought about the matter, I had carried the vague notion that in some places the soil was of indefinite depth. Then and there my mind made its first clear picture of the earth as a ball of rock, with a soil which at its greatest depth was relatively very thin.

On speaking of this matter to an eminent scientist, he told me that he was eighteen years old when he received his first clear impression of the earth as turning away from the sun at nightfall; and that, although he had known the fact from childhood, the first realization came so late, and when doing what he had done hundreds of times before—gazing at the setting sun.

The contents of adult minds would often astonish their owners could they be put into definite form; and it is to avoid such hazy, incomplete conceptions in adult life that care should be taken to make definite and true to fact whatever conceptions a child gets.

Also, treat a child with honest, high-minded courtesy. If the teacher does not know, let him say so frankly, and not put the child off with some specious excuse. If the teacher know that the child's question is one of the unanswered problems in nature or life, let him not hesitate to acquaint the child with the fact, thus stimulating both the courage and the humility of the child and of himself, and deepening that most pathetic of all sources of comradeship—consciousness of a common ignorance and impotence.

Preparation for a field lesson should be carefully made. Prior to taking the children out the teacher should go over the route, select the features which are to be examined, and work out the detail of the examination, so that with the children there shall be no waste of time and effort, and no real distraction. The possibilities of distraction are such, in all field work, that but for a quick and sure holding of attention to a series of objects or phenomena which have previously been selected with painstaking care, and now presented to the children with due regard to order and sequence, such lessons are apt to be valueless.

Also, do not combine study and pleasure—a field lesson and a picnic—unless the teacher's power is practically boundless over the thoughts

and emotions of the pupils. The thought of the picnic will lie in the child's mind as a disturbing force, which should not be there. If luncheon is required, let each child have his own, and think no more about it than he does on a stormy day at the school building. From beginning to end, a field day should be conducted with as much quiet decorum as a house day; and no more recesses or plays allowed to one than to the other.

The field day should be, at once, the most serious and the most delightful of school experiences: the most serious because in one day materials for many days of indoor lessons should be gathered, and children and teacher should feel a zeal not to waste its precious possibilities; and delightful because, whether understood or not, if the day be properly conducted both child and teacher will feel that bond of kinship with the planet as man's great mother which is perhaps the oldest and certainly one of the finest of human sensibilities.

Advantage should be taken of special opportunities and unusual phenomena — eclipses and transits, effects of floods, railway cuttings, borings of wells, storms, etc. If such arise on a day devoted to other matters, vary the programme to take it in.

On a field day whose purpose was the study of some forms of sea-life *in situ*, a child of six startled comrades and teacher with the exclamation, "See! that vessel is sinking." The teacher raised her eyes and looked off shore. A half-dozen or more vessels were in sight at different distances, and so placed relatively as to illustrate well the

rotundity of the earth. It was a clear day, and there was a placid sea, with but a slight breeze making an occasional ripple over its surface. A spirited discussion followed. The children, who were from five to nine years of age, decided that if the farther vessels were sinking they would show signals of distress, and the nearer would be putting out boats to help them. Meanwhile, the children discovered that the vessels sank more and more, until of one the upper part of the masts and sails only were apparently above water; and one of their number suggesting that the sea must "get lower" the farther out the ships go, they all accepted that as a solution of the puzzle, and returned to their former labors.

The topic was afterwards taken up in the school-room, and some experiments made of watching moving objects on flat and on rounded surfaces; and by means of these combined experiences the rotundity of the earth became a living, realized fact to the children. The teacher was obliged to tell them the fact that observation of ships at sea from any point and in any direction would give the same results, so that the earth must be "rounded in all directions."

Nature's changes should be noted and followed, with care to avoid conclusions until the cycle has been completed at least once: the migrations of birds; the formation of buds in the autumn and their expansion and further development in the spring; changes in the coats and colors of animals; the varying lengths of the life periods of plants and animals; the variations produced by

differing opportunities as to soil, moisture, sunlight, exposure, etc.

Teach the child to be definite about these by marking locations on maps or drawings, and keeping a record of times and conditions. For instance, if it is desired to have the child note the apparent movements of the sun from north to south, see that he has a definite starting-point—the chimney or gable of a house, a tree, or other feature which defines the place on the horizon where the sun sets or rises on a given day, as seen from a given point of observation—and then see that all subsequent observations are made from that point and with reference to that object. To secure independent observation in such a matter, each child better have his own individual point of observation and object of reference.

In this matter about the sun the child will soon be astonished at the change of place; then when the sun returns upon its path instead of going all round the horizon he will wonder still more. Get the child's judgment of the phenomena, and be sure that it is based on thought. The point of observation and the object of reference have not changed in relative position to each other or to surrounding objects. The child will then probably insist that the sun moves or changes place; and he must be directly asked what other solution of the problem is possible, and perhaps helped by experiments with moving objects before he thinks of or clearly realizes that the earth as a whole may have moved. This point reached, tell him

the facts, and, as far as possible, how astronomers have proved the correct solution.

In all science work avoid waste of time and energy, and the carrying of rubbish, by the selection of discriminating features. Perhaps to the eminent specialist there is no chaff in nature; but certainly, for purposes of the child's study, there is much more chaff than kernel. It is not enough to teach any fact in nature; there are millions of facts that relatively are chaff; and school years are not only too few to be wasted on such facts, but the contemplation of them is apt to obscure the power to discriminate the kernels.

First of all, a child should learn not likenesses, but differences—those particular, distinguishing differences which differentiate one object from another. In the study of definite object and detail the child will often need to take the pieces apart so as to get a perception of the individualities which combined make the puzzling whole. That perception gained, all minor or other detail should be avoided in order that the individuality be not obscured. The aim should be to leave in the child's mind not a finished picture, as of fine detail of form, light and shade, and coloring, but a sharp, characteristic outline; and all of the child's expressions of his knowledge in drawing, in modelling, and in speech should have this quality.

The last two points are regarded of prime importance, because much of the teaching of science in kindergartens and lower grades which has been observed by the writer has sinned against the child's mind most grievously in this regard—mak-



ing as much of chaff as of kernel, of the undiscriminating as of the discriminating features.

Also, give names and use technical expressions freely. Language is indispensable to thought; and while facts may be carried in memory in a series of pictures, they can be thought over and conveyed to others more easily if duly labelled with the proper linguistic forms; and baby-talk or the avoidance of scientific expression is no more necessary with a student of five than of twenty-five. A word or an expression, as such, has neither terrors nor difficulties to a child's tongue or memory; and when naturally associated with a clearly defined object, phenomena, or idea, will no more be lost from comprehension or consciousness than the thing which it symbolizes. It is not technical expression, but the separation of expression from idea—the actual substance of expression—that is the bane of school-rooms.

While the first aim should be to give broad, general conceptions not only of large, inclusive wholes, but of individual objects and phenomena, some work each year should be of another sort. The child should be getting "something of everything," and also "everything of something." This "everything of something" should not be neglected even with the youngest children. Select some object, phenomena, or topic, and keep it before the child's mind until it is comparatively exhausted according to adult standards. Give short lessons each day on it, until there are indications in some child of mental *ennui* or repulsion to it; then give a succession of varied lessons on other topics



until the children have wearied of variety, when a return to the former subject will be a pleasure. In this manner some subject each year may be exhaustively treated, and the child have a taste of that minute, painstaking investigation which develops the desire for and power of original research. The children themselves will be the best indices of the time element in this matter.

During the ninth lesson on the cotton-plant—the only science subject the children had had for three weeks—a girl remarked, “I’m tired of cotton-plants.” The teacher said nothing, but after the lesson she put away the cotton-plants and all other suggestions of their late lessons, and on the following day took up a new topic. Nearly three months later that same girl said, impulsively, “I wish we could have some more lessons on the cotton-plant,” and the other children echoed her wish. Children—these were from five to nine years of age—will return to a former topic with the same zest as to a once-loved but recently neglected play.

This brings to prominence the most important of all considerations in the teaching of children: it is the child, and not the teacher, who should decide when enough of one thing has been taken. A child’s mind has natural tastes and repulsions; knows when it has had enough, when nausea is imminent; and it should be trusted—should no more be forced and stuffed against its inclinations than its body should be.

Yet a child’s physical body may be so pampered that its appetites are diseased, and his mind may

be similarly demoralized. It is not here meant that a child's whim shall be the guide to either physical or mental sustenance or activity; but that a given wholesome mental stimulus should not be forced upon all children alike, nor upon any child so long or so frequently as to create repulsion to it.

There are plenty of wholesome mental stimuli, and to some of them each child will contentedly and spontaneously respond; from that to which response is spontaneous he may be gently and gradually led to respond to those to which he may have at first no power of response. A real, interior response, which can easily be detected in the manner and expression of the child, should be sought, and something is wrong where it is not obtained.

Neither is it meant that there should never be any forcing beyond spontaneous response. Whether any one can reach skill in any line without doing a deal of painstaking drudgery is an open question. Until children are well taught this question cannot be answered satisfactorily. It may be a Utopian dream to think that without the strain of labors that are forced drudgeries, without feeling the sweat and fever of competition with other workers, a man may reach the highest skill or eminence in a given pursuit; but until children are differently taught it is permissible to think that, if well taught, the many would spontaneously do from interior need and desire what the many now do from exterior material or social necessities, and the rare few from inherent

love. Either mankind is hopelessly mediocre and vulgar in possibilities of character, or the dream is not Utopian.

As matters now are, some forcing seems necessary—something to spur the average, flagging, lazy, and slovenly mind. But forcing should be the last resort; the child should have a chance, during at least the first four years of school life, to find in himself a natural, spontaneous taste for mental activities; a desire for accuracy, finish, and excellence in those activities; and a willing zest in the exercise of them. The writer's experiences with children favor the hope that after four years of such opportunity as this book suggests no child would ordinarily be willing to miss a day at school, or to go without mental food any more than physical.

Dogmatic statements about natural phenomena will often be made by children: they may be corrected or ignored. The latter is the better way where there is to be opportunity in subsequent study to correct them by the child's own observations.

The spirit which is found in the best post-graduate departments of the largest universities should be the spirit of work in all grades from the kindergarten up: a direct simplicity in dealing with phenomena, an avoidance of misplaced sentiment, a candid exposure of error and of the limitations of present knowledge, a genuine humility, and a reverent courage. Without these the first years of school life will have no true dignity and worth; and the child suffers far more than the adult stu-

dent from not living in an atmosphere of genuine dignity and worth.

In preparing a science lesson for even the youngest children, a teacher, unless already familiar with the latest researches in that line, should as far as possible read up in the largest works and latest publications all that is known about it. Elementary works are not a sufficient guide; they are often poorly prepared, are seldom up to date, and the teacher who relies on them alone carries to his pupils an outlook too narrow and scrappy.

The teacher should himself be free from direction in this matter: he better make a poor selection of what is most interesting and valuable or possible to teach to a child from a large treatment of the topic than to depend upon selections made by others. It is desirable that children use their mental powers freely, unlimited and unhindered by any prejudices or worn grooves of thought; and a teacher must emancipate himself from such grooves and deal with the larger aspects if he is to bring about so desirable a result.

The most harmful of all fetters which a teacher can have are false and narrow notions as to what a child can or cannot take—what a child thinks, feels, realizes, actually likes, and is capable of. The child is yet an unknown factor; observations already made are hopelessly at variance; and it would be well if every teacher could meet each new class with a blank sheet on which original impressions could be recorded.

Children understand far more than they seem

to; trivial incidents and thoughtless expressions may make indelible impressions on their minds; hence the necessity of the more thorough, pains-taking preparation on the part of the teacher to make an impression that is worth being indelible. Happy, interested children are rarely given to deceit; so that no one ordinarily should contradict a child's statements about himself or judge for him. Trust him and give the courtesy due.

Never tell a child that which will take the charm from a personal discovery. Let no false judgments pass; but wait time and further observation to correct them, if such waiting be feasible, and it often is. But when a child's facilities for observation are exhausted, let the teacher give all that he knows about the topic as freely as he would to an adult, that the child may regard him as an ever-living stream, with ample drink for all and an abundance to go to waste.

## II

### HISTORY

HISTORY, like science, deals with that which is perpetually in the process of becoming, has a great past, and goes forward to an unknown future.

Science tries to describe the web which nature has woven and is weaving with an ever-changing pattern. This web man affects, rending or mending it according to his moods or his supposed necessities; but these changes are like those which a child may make at the loom of its mother—a small tangle of broken threads or some pretty variation that she untangles or incorporates into her own pattern by a few skilful changes. It is that child only who in the presence of the great mother submits to her teaching, and willingly, patiently tries to work out her pattern, whom she long tolerates at her loom.

Is not history the same in kind, although apparently of man's weaving? He weaves; but does not some power behind him lay the warp, choose the woof, mix the colors, reel the shuttles, work the treadles, and, despite man's best or poorest efforts, determine the final ensemble? Not that man is altogether a puppet—without

him the web is naught—but that the final outcome is not his, and that, in detail, he is useful as he weaves according to a pattern not his own. As an organ in the social body—a finger, an eye, a foot—man as an individual is controlled by something other than his own inherent, spontaneous necessities for movement.

To recognize this, to be a servant of a large whole, to wait or to do according to that whole's needs, to respond to the impulse which arises from within or to the call from without, this is to be a maker of history. All doing does not help to make history any more than all weeds help to make gardens. To be able to distinguish between the doing that makes history and the doing that shares the fate of the weed—for the great gardener is not slovenly nor neglectful measured by his own hours and days—is to have true moral discrimination.

As power to discriminate conduct is more valuable than power to discriminate objects and phenomena in nature, so is history a more valuable study than science ; and as a child's being begins and ends in conduct, he is ready to begin the study of history so soon as he can make an intelligent choice between two phases of conduct.

While the foregoing likeness between nature and man may be true when viewed from the largest standpoint, from a narrower view nature and man present a marked contrast. Nature seems to possess a background of immutable law, which man has leaned upon with a sure trust, and in accord with which he has developed the arts of civ-

ilization. This background has been the goal of man's ambitions, the touchstone of his knowledge, the firm ground beneath his feet, and also the source of the pathos which is inseparable from the lot of every living thing. Man, on the other hand, seems to some extent to determine his lot; his life may be the result of his apparent caprices; and he cannot lean with surety on the future of any man's conduct, not even his own.

From this point of view nature is restful. However wilful or capricious her moods or baffling her laws seem, man believes that the seeming measures his ignorance, and so is stung by it to new efforts to reduce the apparent chaos to order; while man is not restful but inspiring, with a power to stir and to teach which no fixed changeless order can have. Law forbids the formation of an ideal which transcends law; but where no law is all things are possible.

Man in his generous moods seeks to decrease the cruelties of nature by taking some living thing under his protection, ameliorating its natural lot, and cheating nature out of some of her pathos; and out of such generous soil grows the egotism of lordship over both nature and man which ever fills the veins of youth. It takes age to see that the lordship is superficial; let the teacher respect this fact, and encourage those interpretations of nature and man which spring naturally in youthful minds.

That man may do what he will accords with youth; that he must do what he can belongs to age. There is no sharper contrast than that be-



tween the attitudes of youth and of age: to the one, all things are possible; to the other, hardly the negative power "to keep himself from evil." No one can fully appreciate this contrast who has not himself lived in both attitudes, and been through the painful experience of crossing the boundary between them.

This constitutes a fundamental reason why the young in attitude should be the teachers of children, for age tends to seek fruit from stems that have not blossomed.

The lessons of age are beyond computation in value to the social whole; but to the individual youth even the presence of age is hurtful, unless by retrospection it return to its former attitude, and give youth the freedom to grow in youth's own way.

No mortal ever learns by the experiences of another; from them he may get intellectual perceptions, but not the emotional depth which seems necessary to make of an event a reality to the understanding. He learns by his own experiences, and another's experience but serves as a picture or comment by which to interpret his own. This is the proper point of view for the teaching of history. The child's own experience is the sole interpreter of historic facts which he can understand, and he should not be made to learn—that is, memorize—other interpretations.

If history could be taught in accord with this point of view from childhood up, the action of youthful minds upon the facts of history would produce the effects that reinvestigations in science

do, and present interpretations doubtless would give place to others. A child now learns that interpretation which expresses the bias of his immediate environment, and the interpretation which his own nature is capable of is either still-born or strangled by parent or teacher at its first cry.

If a child is to have facts, and interpret them himself, with such comments and corrections as subsequent facts alone can make, much that passes for history must be ignored. He must have the original sources and nothing else, until the historic spirit has taken up its abode in him and become part of his fibre.

That history begins in legend expresses man's ignorance, and it expresses nothing more, however far the argument be pushed; and if a child is to deal with facts, he should not begin with those makeshifts wherewith man has sought to glorify the limitations of his knowledge. Legend, myth, folk-lore, fairy tale, and the historical novel have their places—in both history and literature if they be worthy—but they should not be included in a scheme which seeks to develop in childhood the germs of an historic sense, and a sane, true outlook on human conduct.

A child has great capacity for vivid picturing; and until this capacity is trained in the faithful presentation of facts, its exercise on the grotesque or fanciful may do much harm, even to the warping of the whole mental attitude in favor of the marvellous and miraculous. A sane and natural clearness and freedom in the outlook on life seem, above all things, needed at present. The dense

materialism of the nineteenth century may be but a reaction against a deeply rooted supernatural bias, which man revolts against but is powerless to quite get rid of.

To keep the student from any sort of bias or romancing should be the aim of a teacher of history, no less than it is the aim of teachers of science.

Time covers her past with new growths, and a true historic spirit may perhaps be best developed by contact with that which is recent—at least, a child's study of history should begin with his own immediate environment.

From babyhood a child lives in a world of symbols; all of his toys are representations of something larger and different; and he is not at all deceived about the matter, so that he takes easily to the use of models, drawings, maps, and globes. For purposes of right method it will be necessary to construct one map of the school-room or school-grounds. If the latter is chosen, and can first be made on the soil of the grounds themselves, and afterwards transferred to paper, and thence to blackboard, so much the better. This map should be drawn to exact measurements and with reference to the points of the compass, to show the children the quickest way to get at the best results.

Then show the child a map of the town which he lives in—a good model is better if the school possesses one, but an accurate map is better than a bad model; tell him only so much as to distinguish between the streets and the blocks of houses;

and then leave him to find his own residence. Children in small towns and villages will readily do this if left to themselves and not hurried; in large cities they must ordinarily be helped by having the location of the most prominent building or feature which is nearest to their residence pointed out. After locating his own residence, let each locate a few other residences and as many public buildings and general features as his own interest spurs him on to do. Each child should have a small map—his own possession—and the accuracy of his use of it should be tested by his locating the same points on a larger wall map.

These preliminaries accomplished, the children are ready for their first lesson in history. Take them to the nearest point whose condition approximates the natural state, untouched by the hand of man; lead them to note the presence or absence of those features on which the lives of men depend, and any features peculiar to their own historic environment. Then tell them that where the town in which they live now is there was once such conditions as these—naming the conditions and any special differences from what they see before them. On the following day take the children to the highest point available in or about the town—a place from which as much of the town as possible can be viewed at a glance; and after the children have taken in the sight tell them to shut their eyes and think away all the buildings, pavings, bridges, etc., and put in their places the original forest, grassy prairie, sagebrush plain, etc.

On subsequent days model and map that first condition. Then locate the first house in the town, and afterwards on model and map. If the house be still standing, take the children to it; if not, to see where it was.

At this point the teacher should carefully prepare, on transparent paper, a set of maps of the original condition, one for each child; if a forest, shade lightly with a pencil; if prairie, leave blank, giving outline only. These maps laid over the maps of the present will serve to deepen the contrast between past and present. Then as each historic change is reached it should be located on the transparent map, and its place on the present map may be found by placing one map over the other. A little spot rubbed clean in the forest shade to show the first clearing, and the outlines of the first house and farm fields marked in it, will mean much to the child. In this manner reclaiming swamps, filling in rivers and harbors, changing the courses of streams, and all important changes, may be intelligently followed.

After the first house is located it should be minutely studied with regard to size, shape, materials used in construction, condition of these materials, division of house into rooms, interior finish, furnishings, etc. Make these details vivid by drawings and models, or by having the children actually construct and furnish a model on as large a scale as is feasible.

Long before the details are finished the children may become eager to know the people who built such a house and used such furnishings, and will

ask many questions. Lead the children to themselves find, in surrounding conditions, answers to as many of their questions as these conditions can answer. If the house was made of logs, the forest furnished them; if of adobe, clay was abundant and trees scarce; but why logs instead of boards? or sun-baked instead of kiln-baked bricks? If possible take the children to a saw-mill or a brick-kiln, and leave them to find the answer. Children who are not spoiled by being perpetually answered have usually remarkable acuteness of intelligence and good judgment, and leaving them to find their own answers will preserve these powers and stimulate their use.

The teacher must be apt to see the means or conditions which furnish the answer; but that answer he should not formulate until not only the means and conditions but the child's own intelligence is exhausted. At the same time he should guard the children with rigid care from forming a habit of guessing. Better tell the child everything than let him make random, unreasoning guesses. Teach a child to think as to shoot, with a conscious care about the direction of the attention and the aim or object of that direction. And avoid weariness: a child's muscles cannot long stretch the bow and aim the arrow, neither can his mind long retain the tension which is required for good work. The rule should be concentrated attention for a few moments, and then all the rest which the child will take. More than this is sometimes necessary—actual command to cease work; for a child, through his absorbing interest, often

becomes insensible to weariness, just as adults do, and needs to be protected from himself.

The environment exhausted for answers about the house and its furnishings, introduce the occupants. Where did they come from? why to this place? by what means? how many days' journey? what did they bring with them? etc. Let the children live over that family life, share its labors, hardships, and triumphs; know the clothes they wore, the food they ate, the work they did, the amusements they had, and the changes they wrought. Always seek answers to the "Why?" first in the conditions of the environment and its nearness or distance to other environments. What cannot be so answered will lead to the characteristics of the persons—age, health, industry, thrift, intelligence, education, etc. Thus in the study of the life of the first settler the child will come upon the great factors in history—environment, human capacity, and the reaction of the one upon the other.

This minute study of one beginning should form in the child's mind a background of knowledge and a method of research which may serve as a point of reference—the present is always in the mind as another point of reference—and a model for further study.

This finished, go by rapid stages or leaps from one historically important point to another. Facts and persons are of no account as facts and persons merely; but a fact or person that has helped the historic movement should not be slighted. Dwell with such facts and persons un-



til their connection with the past and the changes which they produced are clearly apprehended.

If a child's mind is kept in contact with such realities, and free from the suffocating smoke of dogmatic opinions about them, from kindergarten to college, he will possess a large body of valuable historic facts; and another, more or less coherent, of judgments about human conduct and character, which latter will be an expression of his own personal reaction on historic fact, and of the influence of such fact on his own character. Such a youth, having made and unmade his judgments over and over, would be ready to profit by contact with a mature and large scholarship without being stultified thereby. To such the best courses in history in our great universities would have meaning indeed. But they who reach the university are few. To all others books and common men only would be accessible; so that one duty of the teacher will be to introduce the child, as early as possible, to the masterpieces of history. As soon as a child can read fairly well he can be set to work on passages the most interesting to him in the largest works. Let the passages first selected be short, piquant, stirring; so that the child, instead of being wearied, will be stimulated to read more than has been assigned. A child who is well taught, even for a few years, will not be content with summaries of history, nor with the records of atrocities merely.

Begin history with the first day in school; let no week pass without its lessons; and if the child must leave school at twelve or fourteen he will



have gained an interest in historic movement which no accident of the years can destroy.

When the immediate environment is exhausted, take up the thread which links that environment with the greatest event in the national history—in our land this may often be the Civil War. The history of that will lead by many interesting paths to all that is most important in the history of our nation and continent.

From this great story fail not to pick out what youth most loves—deeds of heroism, endurance, and of the iron persistence of great natures. The story of La Salle's wanderings is more noble and more pathetic than that of Ulysses. The charm of that world-famed tale is not in its events or characters, nor in its supernatural accompaniments, great as these all are, but in the combinations of these and in the exquisite diction of their final expression. Our continent needs a Homer to restore its heroes.

Facts do not smother the poetic fire, but dogmatic opinion about fact does; and it is such opinion that is the curse of our age. Let us make a simpler, gentler atmosphere for human growth; give each the privilege to think and to act for himself, without ridicule or ostracism, from two years old and upward; and lo! poetry will come back, and our heroes no longer lie in dishonored or neglected graves.

A proper study of history gives certain measures of value which can hardly be so well gained in any other way. Minute study of the externals of life in different epochs shows how relative is

their value as indices of prosperity, and how worthless as guarantee of character or social status. And a boy or girl who has seen externals change from age to age will hardly think that those of his own time will remain, may not be improved, or in themselves are very potent factors. They are opportunity, and he is or should be the ruler thereof, not the slave. Moreover, this boy or girl may get some very old-fashioned notions about success. A man who amasses a property which his children squander may have missed the crucial point of success—the being passed on. What dies does not live; and only that which lives and maintains its individual thread in the historic movement can be said to have succeeded, using the term with its truest meaning; and this is true of measures as well as of men.

This is still more true of thought. A plant dies for want of water within a few feet of a flowing brook; so a man dies intellectually when he becomes rooted to the soil of his own thoughts, and neglects to drink, day by day, from the onflowing stream of living books and men. The plant's helplessness may be pitied and water carried to it; but nothing can revive that man who refuses to pull his feet out of his own hard-pan and go drink freely for himself. This is one of the greatest lessons which the study of history teaches.

Do not require or expect that the children will remember all that they show interest in, or even that the teacher thinks important to be remembered. One child will remember one set of facts

or historical phases, and another a different set; trust them and let each retain what he will.

The one care of the teacher in the matter should be not what but how the child remembers. The what each child's own nature will determine. However much the teacher may labor in this regard, his results will be superficial and transitory, unless seconded by the child's nature, which inevitably is the real arbiter of its own possessions. The how is the teacher's peculiar field, and in the matter of memory he largely determines the order and accuracy of the child's mental habit. The teacher's mental habit will effect the result in the child's mind, whether the teacher desires that it should or not; but whatever his own mental habit, he may do something to form in the child's mind habits of order and accuracy.

Insist not that the child shall remember and reproduce any given facts or series of facts, but that what he attempts to reproduce he shall do so perfectly and in good order.

Slovenly mental habits incessantly disturb the whole machinery of life everywhere; they are the flaw in evidence, the friction in government, the irritation in social life, and the skeleton, first and last, in every man's closet. To know when you know and when you do not know; and to be capable of fearless, not-ashamed reticence or speech about the latter as about the former—this is one of the greatest boons educational training can confer; and to confer it is the teacher's privilege. He cannot make mind, he cannot greatly alter the inherent, natural bias of a given mind—and

perhaps he ought not to desire to, lest he warp what is better than his own ideal—but he can train mind, and, in a large measure, determine the quality of its activities.

To set a child a task which is beyond his capacities is folly; but a task assigned, the child should—time enough being allowed—do it as well as an adult would under the same circumstances. Age should not be allowed to determine the quality of results in any department of effort; the kind and amount age must determine, but the quality never. The child must learn, must do over and over, in order to reach the proper quality; but so must adults at all ages. A woman who has never handled a needle may be as awkward with it, on first trial, as a child is. Ask little of a child, and see that he reaches perfection in it.

Also, if a child choose his task, insist on the same perfection, if within his capacities, no matter how irksome to the child, or how ill-adapted the choice. The teacher should try to protect a child from bad choices; but once made, they should be borne to the bitter end; so shall a child learn the limitations of his capacities and tastes, grow modest and truth-loving, and become fitted for the inevitable burdens which circumstances and his own choices will surely bring to his lot.

It is customary to teach a child something—a bit of poetry, a fairy tale, etc.—and when the child has learned it in a haphazard way to praise him, and to laugh at his picturesque or humorous variations. Remonstrance at this usually brings the

excuse, "Why, he is only a child." During a visit to a famous school a class of children from eight to ten years of age was taken from the usual programme to illustrate and recite some tales, because the work in them was thought to have been exceptionally good. Each child was told where to begin, and not one of them told his part of the tale without gross inaccuracies. Is inaccuracy synonymous with childhood? Nay, childhood can especially be accurate, since it is fearless, unbiassed, and has keen perceptions and great retentive grip. Forbid an inaccurate, slipshod, slovenly statement in childhood, and the unconscious liar will cease to exist.

In some schools history is begun in the lower grades by teaching the mythological tales. Mythology is certainly a part of history, because it is a part of the lives of the people; but it can be understood as history from the standpoint only of the peoples of whose lives it was a part. To them it was a religion, the highest, holiest thing they knew, and can be understood only in connection with other aspects of their being; and there seems no valid reason for beginning the study of any people with the religious aspect of that people.

Indian myths also are given, as though they were the beginning of our history. The Indian has played a small part in the historic movement, and his superstitions can never be more than one of the curiosities of human belief—work for the antiquarian and specialist, but hardly a fair gift to a child whose years in school are few. Moreover, the Indian has few points in common with

us. His nature is alien and does not assimilate with ours, and his nearness to us is superficial, the accident of a previous occupation.

The Scandinavian and the Greek are our kindred, our legitimate ancestors in blood and in spirit; but as a good man does not teach his child those superstitions of his forefathers which he has himself outgrown, so should the religions of the Greek and the Norseman not be given to our children. Let all mythologies wait until they can be understood for what they are, and their beauty and force felt in connection with the life which they adorned and solaced.

Remember that a child's mind is not yet fixed in grooves or limits; and that the finest seal will make as indelible an impression on his plastic capacities as the coarsest.

That optimistic view of life—unfailing reward for good and retribution for evil conduct—which it seems to be thought necessary to keep before children, this study of history will correct. Whatever views a man may cherish about the final outcome of human conduct, the actual results in all communities sometimes favor the immediate evil instead of the immediate good. Youth is not slow to see the fact, and sometimes to make of it a license for his own bad passions or greed. To some minds this may seem a sufficient reason why history should not be taught to children unless from expurgated or selected documents, or by a teacher who will counteract the effects of actual facts by insisting that there must have been blame where no evidence of blame is, or somehow, some-

where beyond our ken, justice must have ruled. It might be well for such objectors to spend a few days and nights with Plato's ideas about justice, as the perfect doing of his own proper work by each social unit. This conception might possibly come to seem a feasible one for the bringing up of a child by.

The natural world is full of catastrophe and apparent cruelty to the individual, and so is the human. To hide this fact from a youth is to fill his mind with illusions; to misinterpret it, with egotism, rancor, or a misplaced humility.

From the point of view of this chapter history is the movement of events and what moves, be it persons, ideas, customs, or institutions, and is concerned with the records as merely vehicles of this content.

A child's consciousness is continually occupied with movements and what moves, and rarely with record keeping; and to fasten his attention upon the record is to give him the dry husks of history instead of its living reality.

The records themselves he will retain and learn to discriminate their values in proportion as his mind is concentrated upon the trend of events and the conditions which produce that trend, and the record is lost sight of save in its to him unconscious use as an adjunct to his thinking and picturing the events.

Such corrections of the historical narrative as are made from age to age depend less upon the discovery of new documents than upon the new point of view which some one gets of the move-

ment, and so gives to the same old documents a new content.

Records are to history "the letter that killeth," for the movement itself has charm to students of all ages, and especially to children; and it is here, in connection with the actual movements of our human whole, that a child's fondness for stories should be fostered and fed.



### III

#### LITERATURE

LITERATURE lifts one into an ideal world, as distinguished from the actual world of science and of history ; and the excellence of any given product in literature depends chiefly upon the quality of that ideal.

For youth, literature as an educational factor has uses for instruction, correction, refuge, and delight.

All changes over which man has control occur first in the mind ; so that which changes man's conceptions of what is desirable helps to create that which shall be. In this sense literature is a prophecy—a creation in the ideal world, by the greatest minds, of those models or patterns according to which lesser minds continually work out the actual world.

Hence, from childhood up, literature should supplement all other departments of study, in order that those processes of transformation which steadily go on in humanity, as a whole, may not be lacking to any individual mind ; for only through those transformations which take place in his own mind does any man help to create the future. As a mere machine, he may perform the will of an-

other mind ; but such labor affects the body only, never the soul or vital principle of any reform.

As the point of view and the thing viewed are of equal importance in scientific and historical research, perhaps the best corrective for distorted facts is a change in the point from which those facts are viewed ; and one of the especial offices of literature is to correct our points of view.

Scientific and historical studies, pursued by themselves alone, are prone to beget a hard way of looking at both nature and man—the so-called matter-of-fact way, which regards sentiment as a hinderance, and forgets, for a time, that emotion is as fundamental a factor of mind as perception, and is quite often a truer interpreter of facts and phenomena. If there be mind in nature, there is feeling there ; and feeling alone can interpret feeling ; and no man is without emotions which it takes emotions to interpret, so that both nature and man demand the free play of the emotions for their fullest interpretation.

Moreover, if, as psychologists affirm, feeling probably precedes thought, is the initial phase of all mental phenomena, all ideal conceptions have their germination in the emotions. Certain it is that in literature, which is an expression of man's ideal world, and the prototype of the actual, the emotions are allowed a freedom which is denied them in scientific and historical research.

Also a man often feels the falsity or truth of a thing, or the ugliness or beauty of it, long before he can give to his perceptions or reason a satisfactory account of why he feels as he does ; and

in the best literature one is continually finding his own vague, undefined emotions put into clear expression, so that thenceforth he can give a clear account of the faith that is in him. In this way literature helps a man to have faith in himself, and to correct those petty, limited points of view which may belong to his environment by those of the larger, greater minds who have interpreted mankind to itself from age to age.

Every man needs a refuge, even from himself; and literature is perhaps the only refuge which will never fail him. It is probable that every problem of our human life has somewhere had a solution, every aspiration of man somewhere an expression; and in so far as literature is a record of these solutions and expressions, it may help to supply every human want. The world of mind is as real as the world of matter; and he to whom the world of matter is especially hard, narrow, and cruel may find in the world of mind that fulness of being—that is, of experiencing—which each man instinctively craves.

The harder the lot, the narrower the life in matter, the greater the need of fulness in mind; hence literature should not be the possession of a leisure class, but peculiarly the possession of that hard-working class which most needs the refuge and enlargement which literature gives. Literature is pre-eminently the tribute which the leisure class pays to the laboring class, as the laboring class pays to the leisure class the tribute of physical toil; but thus far the laboring class seems not to have realized its privilege, and one

of the greatest duties of a teacher is to bring this realization to consciousness in each mind.

This is, perhaps, a bad use of the word leisure. The production of literature requires exemption from physical toil and the nagging irritations of extreme poverty; but none the less is that production labor of a most exacting kind; and a youth who does not realize this fact will have missed consciousness of a vital point in human relations.

It is a matter of the focus-point of attention. If circumstances compel that point to be in the material realm, it cannot at the same time be in the mental; but because the ideal is the pattern for the actual, the worker in matter should be familiar with the ideal world, although it may not be his province or within his power to create in that world.

It is this ideal element which makes literature so peculiarly a refuge for all sorts and conditions of men, and at all ages. To childhood and youth life is especially hard where circumstances pull one way and inclinations another, and the scalding tears which youth sheds over hopes that are crushed and limitations that are inexorable have no balm so sweet as that which books afford; and when the spirit is finally bent to the inevitable conditions of one's lot, books keep alive in the nature much that would otherwise die, and forbid the formation of those rigid lines in thought which prevent further mental growth. One who loves, not the confirmation of his pet dogmas, but fresh ideas, will always be hospitable towards

books, and by means of them continue to grow as long as life lasts, no matter what his exterior, physical lot may be; so that literature is a preserver as well as a refuge.

To the body of the worst criminal, men allow sleep; how much more needful the cessation of action in a vicious mind. Mind, whether virtuous or vicious, needs to have, every day, the pulses of its life beat without conscious effort of its own, needs a rest in which the great, normal forces of mental vitality resume their sway. The reading of a book which is an absorbing pleasure while it lasts supplies this need. What sleep is to the body are hours with such books to the mind—a readjustment of the vital energies, a return to mental health and vigor. This is the last and the greatest use of books; and a use from the need of which no mortal is exempt from cradle to grave. Other things may temporarily perform this office—a day among mountains or by the sea; the contemplation of a work of art; the satisfaction of a great affection; music and the drama—but nothing which is within the reach of all can permanently do it but literature; because, like the body's need of sleep, the mind's need of this rest returns day by day, and books only can always be on hand.

One who has access to a good public library need not lack for those uses which books perform; thousands who might have such access do not know how to seek it, and would not know how to use it if they had it. Hence to teach a youth how to use books, and to form in him a habit of

using them, will go far towards securing for him all the benefits which an habitual use of books confers, for to increase the demand will increase the supply of libraries and their facilities. Moreover, a real lover of books will possess some copies of his own, no matter how poor he is, for the "must haves" of daily existence are usually supplied; and a book which costs but half a dollar may last a lifetime and be a perennial pleasure.

A book is, on first publication, of value in proportion to what its readers get out of it, quite independently of what its author meant to put into it. This value changes because the readers change; but, at last, a book which survives more than one generation of men comes to have an intrinsic value; and books which have survived for centuries may be said to express something which is generic and constant in humanity—to supply needs which are universal in time, and know no distinctions of race, sex, environment, belief, or condition. Because this is true, such books should be made the basis of all work in literature during the first years of school life; in order that no child may leave school unacquainted with them.

Good literature has a power of charm, even to a child, which no lesser product has—a rhythm and a harmony of thought and emotion which insensibly pass into those who hear it well read, and affect the innermost being. Therefore, read to the little child the greatest products of the wisest men, a saying, a paragraph, or stanza at a time, and repeat them over and over; and when school-days come, treat the child with the respect which

it is hoped may be due to the man or woman which he or she may become; and leave the weeds and transient growths in literature to those who do not yet know them for what they are.

Hunger is sharp in childhood, and will stuff itself with scraps and porridge if the parent be too poor or too penurious to provide a better diet. Mental hunger shares a worse fate; for it is not even wholesome scraps and porridge which most children get.

Can pyrites deceive the miner who has taken out thousands of gold? No more can the "fool's gold" of literature delude those who have been made familiar with the real metal. The pyrites of life an adult cannot hope to escape contact with; but that adult only will surely know it at first glance or touch who has from childhood been familiar with the gold.

A thing cannot be defined in terms of itself; and the true character of an inferior thing is fully appreciated by him only who is acquainted with its superior. Childhood is the period when standards are formed; and no adult ever quite escapes from bondage to those values which he learned in childhood. If then it is desirable to possess power of instinctive recoil from that which is unnatural, disorderly, ugly, and foul, either in life or in books, a child must live long enough in contact with the opposites of these to have his own being attuned to those opposites.

The teacher himself may not care for the great books, but let him not on that account keep them from his pupils. A child may take delight in a

work which an adult is untouched by ; and a teacher may assist at the development of tastes and the formation of habits that in quality may transcend anything which he is capable of.

One evening a child of nine overheard the reading of *Romeo and Juliet*. On the following day she asked permission to take the book ; and thereafter, throughout the winter of her tenth year, she read Shakespeare until she had read his complete works, and several plays many times over. At first it seemed incredible that a child whose parents were uneducated, who until eight years of age had neither seen books nor heard them much talked about, and who at nine possessed copies of *The Arabian Nights* and Andersen's *Fairy Tales*, should appreciate Shakespeare sufficiently to leave for him, day after day, other books and play. Rallied and chaffed about the matter, she proved her interest by repeating pages with a manner, a tone, and a facial expression that were unmistakable. The writer's liking for Shakespeare came late, and perhaps has never reached such a pure and absorbing delight as that child felt at ten.

It is not that every child can reach such heights of appreciation, but that he should be provided with opportunities and incentives, and then left to deal sincerely with the books and with his own nature.

Let the greatest books be always a presence to the child, free to his touch, and, as he learns to read, free to his explorations. Do not fear contamination. Impurity does not exist for him who



is unconscious of it. The child above mentioned, through three years of intimate familiarity with Shakespeare, asked no questions, and gave no sign of being in anywise conscious of that which the most scrupulous would wish a child to be unconscious of.

This early familiarity with the greatest works is the child's opportunity, the stimulus to his nature. If his nature respond, the teacher's task is thenceforth easy; but it is not yet accomplished, for there remains the necessity to build up a habit which shall last a lifetime. The capacity to enjoy a good book does not insure the reading of one. Thousands have the capacity and do not know it, and other thousands know it and do not use it. The first duty of a teacher, in literature, is to bring the capacity to consciousness in each mind; but a far greater task it is to build on that consciousness a life-long habit.

This can be done by reading only. At first nothing should stand between the child and what he hears read or reads. No fear should be allowed to come near his mind, no comments should be made, no unasked-for instruction given. The child should be asked no questions, nor be required to ask any himself, nor to repeat or reproduce anything heard or read. He should be free to respond naturally, and to let whatever love for literature there is in his mind germinate and grow unchecked, and all of his questions should be truthfully answered.

During the first years of school life read to the child from the greatest thought the world has.

The voice of the reader should be melodious, pleasant to hear, and the reading should be simple and clear; so that whether the child get any definite results or not, he shall like to listen. As soon as the children can read, copy on the black-board some fine, short passage, and let them read that passage, the teacher stopping for it at the right place. That passage the children will probably remember. Put the picture of the author on an easel before the children, that the eyes shall have a focus-point, and the mind build up a true association between the author and his thoughts. Pictures of places, buildings, etc., should also be used whenever it is convenient to get them. But be not too scrupulous about this matter of illustration. A child takes in through his ear more easily than through his eye; he is alive to sound far more than most adults are. In scientific and historical studies he will have abundant training in getting at knowledge through the eye; in literature he should have cultivation through the ear, until he is sensitive to all that is best in the sounds and rhythms of human speech, and accurately and quickly grasps ideas and forms mental pictures through sound alone.

When a child is able to read give him books galore, the best in every line, until he knows that many books and many lines of thought yield the uses of literature—instruction, correction, refuge, and delight; and not until the refreshment of a good book is as imperative as the refreshment of a good dinner can the habit of reading be said to have been formed.

If a child's nature does not respond to the stimulus applied, do not infer mediocrity nor judge future possibilities. A woman who had twice failed to get anything out of Dante—once in her twenties and again in her early thirties—at forty picked up a copy and was surprised to find it interesting; and thereafter for some weeks her leisure was absorbingly filled with it.

The teacher may hope that if the response does not come early it may come late, and that the early contact is not time and energy wasted, since it leaves a memory of something to which others respond, without which memory the stimulus might not be applied when the power of response has been gained.

After one trial—extending at intervals over several years—of the great books, the child should be allowed to reject them if he wishes to do so; also, these years of trial should be broken by excursions into lesser fields. The teacher should try now one book, now another, until he thinks he knows what is the phase of literature to which each child can instinctively respond; then, for each, the best in his chosen phase should be provided. This is food to the individual self, and it should not be stinted; but along with it should go conscientious work in lines which all follow alike. In literature a double life must be provided—that which the wise have declared to be good, and for each that which he himself likes.

Let the teacher not forget that to each child a book is of value, not in proportion to what its author has put into it, nor to its intrinsic excel-

lence, but in proportion to what the child gets out of it; and be slow to censure, despise, and, more than all, ridicule a child for his judgment of any book. The child's ultimate needs are known to himself alone, and, whatever they are, they should be respectfully treated.

Fiction may be as necessary to a child's mental life as sweets are to his physical, but neither should be allowed to take the place of other nourishment or be too frequently indulged. That a child has so insatiable a craving for "stories" that nothing else can delight him is about as true as that his liking for candy necessarily forbids a relish for good bread. The wide-spread notion that a child must be fed on fictitious and romantic stories may be quite as responsible for common habit in this matter as is the nature of childhood. A child may live in an unreal, dream world because it has been created by others and forced upon him rather than because his own nature finds in such a world its natural expression and sustenance. There are intelligent children who ask of a tale if it be true, and, receiving a negative answer, refuse to listen further. It is possible that the great mass of juvenile books of all sorts would rot on their shelves if schools were provided with an abundance of historical and biographical narrative, true tales of travel and adventure, and the best books in the literatures of all times and peoples. It is, perhaps, not fiction *per se* that is so objectionable, but the poor quality of most that is offered. Yet of the very best fiction—fairy stories included—it is perhaps most wise to regard it for

the young child as the sweets of mental nourishment, to be most carefully selected as to quality, and given in the play hours of the mind.

In considering the later years of school life the modern novel must be taken into account. The youth cannot be kept away from what he finds at home, in society, in travel, everywhere. The exceptional youth of exceptional training can be left to his own tastes and judgments, but the average youth with the average training cannot.

The modern novel is a vehicle for serious propaganda, is realism gone mad on the most vicious side of life, as though there were no more a realism of the virtuous side. We are too near to judge whether this is a vagary or a serious departure. Certain it is that some people still prefer their viands separate and a clean plate for each.

Serious subjects of study are not in themselves disgusting or nauseous, however painful to the emotions or destructive to self-love their revelations are; it is when out of place that they irritate beyond endurance. No sincere, thoughtful person objects to knowing the true state of humanity, in slums or elsewhere, nor doing something towards ameliorating the common lot; but all have a right to object to being treated insincerely or taken for imbeciles.

Is it not insincere treatment to have intense sentimentality, a prurient, morbid sensuality, and vicious, crime-stained personalities held up as pictures of modern life—conditions contradicted in the experiences of us all? Is it not being taken

for imbeciles when it is thought that persons whose touch would be a loathsome contamination in real life can be pleasant company in a book?

Why try to make familiar to the mind's senses what the body's senses must hate and loathe? There must be one of two results—a breaking down and debasement of all the sensibilities, or a hopeless, pessimistic outlook on life. This is no plea for that innocence which is ignorance; for all knowledge of all sorts which a man or woman is likely to find useful through life's journey should not be stinted; but there are times, places, and conditions which “good form” for the mind requires for the giving of certain kinds of instruction, as surely as “good form” in social relations requires the seclusion of certain personal offices to the privacy of one's own apartment. It is the horrible mixture of things, all sorts on one plate—nauseous medicines and nasty herbs mixed up with the daintiest fruits—that makes some modern novels so exasperating to a refined and discriminating palate.

Aside from the fact that a false extension of one's outlook on life may be worse than no extension, there is a limit to the burden which any mortal can healthfully carry: to increase the burden is to take from the efficiency of the man as a worker; and there is such a thing as having too much knowledge of human vices and miseries.

If it be desirable to carry a sunny, flexible, growing spirit through all the cares and sorrows of life, give to the youth what will nourish such a spirit—contact with all possible brightness,

beauty, movement, and growth; and keep him away from what is stagnant and loathsome until he has the strength of a man in him, and knows where refuge can be found from stagnation, weariness, and foulness.

The average man can do but little to change the lot of any other man; he can hardly keep his own feet from slipping. Then teach to the average child and youth what he is most likely to need as a man to make his own lot mentally endurable; and let the offices of literature be for personal use in interpreting the man to himself, and in satisfying those needs which are the deepest and most universal.

#### IV

#### LANGUAGE

IN the work which is described in Part I. no experiments were made in teaching foreign languages, because of certain difficulties in the way of making such experiments as were desired. French was taught to the children throughout the three years by a competent Frenchwoman, but it had no connection with their other studies.

It was desired that the sentences which the children themselves constructed, and which were the basis of their reading and writing in English, should be made the means of introducing the children to another language; and, as nearly as work which has never been done can be described, it would have been as follows, no allowance being made in this general statement for the opportunities which those children had for hearing another language spoken, either at home or about Boston. Any general plan must, for intelligent application, be modified to conform to the conditions of the child and of his environment.

Before teaching a foreign tongue some desire to know it, some curiosity and interest about it, should be awakened, in order that the child may



have something within his own mind which can make an intelligent response to the stimulus from without.

If the language be French and there is a French quarter of the town, make several trips to that quarter to impress the fact that there are people of all ages who habitually speak French to one another. Then, by means of models, maps, globes, pictures, and narratives, make France as real to the children as possible, particularly the lives of French children—their homes, toys, games, and schools. When the child has taken in the fact that there are miles and miles of populated country, many villages, and large cities where all the people speak this strange tongue, where even the baby thinks “*l'eau*” instead of “the water,” he has begun to appreciate the artificial character of language and the inexorable barriers which it creates—artificial because the human need is the same, the expression only varies; and inexorable because nothing but hard toil can cross the barrier. The language must be learned sentence by sentence, phrase by phrase, word by word, idiom by idiom.

Fortunately, the child cannot feel the difficulties of this barrier as an adult may, but he will realize that he cannot enter into the French child's life and share it, nor the French child into his, without each learning to speak as the other does; and as in schools all over France children are learning to use his mode of expression for our common wants, so children in this land are learning the Frenchman's mode; and both are neces-

sary to each if they are to understand one another when they meet.

This preliminary work done, the child is ready to begin the language. The sentences which are kept for their reading of English (see Part I., pages 3 to 13) are their own expressions for ideas which they have gained by their own personal observation, experiment, or other effort. It is presumable that those ideas are clearly apprehended. To express those ideas in good, idiomatic French; to write them on the blackboard in columns parallel to the English expressions; to have the idea suggested, and then its expression in English and in French alternately given, not only in speech, but in silent thought; to have the French sentences printed opposite to the English sentences on alternate pages; to have the children write the French as often as they do the English—to have this done until, for these sentences, the French expression is as familiar as the English expression; and this work continued, month by month, would insure that the children learned to read and write French as rapidly as they learn to read and write English.

If from the beginning and throughout every lesson care is taken to have the child think a given idea or statement in French after reading it in English, and the child is urged to try to pass directly from the object or phenomenon to the French expression as the French child would, he would soon be able to give the French expression first. For instance, suppose a science lesson has been finished in which have appeared

ideas for which the child has already all or nearly all the materials for expression, and during the lesson has, without thinking about it, used for such expression his own language; suppose that the reading lesson follow, and the teacher, instead of asking the children to tell, as hitherto, in English what they have learned—as the child naturally has done and would do without the word English being used—says, “Let us fancy ourselves in France and tell what we have learned as we should if we were French children and had just had a lesson on ——” This effort should be made until it can be successfully accomplished.

In this manner a child might learn more than one foreign tongue while learning to read, write, and correctly use his own. The time would be lengthened some, the learning to read and write English would progress more slowly, and fewer sentences would be used; but the gains would more than balance these losses. Moreover, the losses would not be real; for these conditions would last through the initial stages only, and the use of three or more languages so increase facility in the use of any one of them that after some years the child so taught would know his own language quite as well as does the youth who knows no other, and would have, besides, the same easy familiarity with two or more foreign languages.

A child so taught would come to regard languages as a sort of clothes to the pictures and ideas in his mind. These are the same, whatever speech is used for expressing them, just as his own

body is not changed by putting on a different suit of clothes. Then, without embarrassment or hesitation, he could put the same living idea into one suit or another at pleasure.

This is what it was hoped to do with both French and German in the Boston experiment; but as no attempt of the sort was made, it is impossible to tell how far such an experiment would have justified the anticipated results. Certain it is that few people ever reach such freedom from bondage to one language and such familiarity and easy use of several as it was thought could be acquired by a proper beginning in childhood.

Also, it was thought that Latin and Greek could be taught in a similar manner, since it would be almost as easy to make old Rome and Athens live again in a child's imagination as to present Paris and Berlin. Moreover, the associations of these ancient languages would make a more quick and indelible impression than those of the modern tongues, because the life was so different, and the very order of thought different; so that in entering into and trying to live over the life of a Greek or Roman child, the child of our day constructs a world with differences of a sort that have an especial charm for him.

In some spring month dress the children in Greek garments and have a Greek flower festival. On some winter night collect them in a Roman room, in Roman dress, and give them Roman games and a Roman supper. Would the children forget such experiences?

Greek and Latin could be made as living and as real to a child of our day as any modern tongue is if Greek and Latin scholars would but turn attention to the needs of children and supply them in this line. Many who are lovers and teachers of children would gladly try this experiment if their own knowledge of Greek and Roman childhood and their power to use those languages were but adequate. The reproach which Milton makes, that after seven years of study a classic cannot be read without a dictionary at the elbow—true of college students to-day also—could not be true of those taught so early and so well.

If it be worth while to learn a foreign tongue, either ancient or modern, it is worth while to make experiments in teaching languages until means are reached of decreasing the present felt burden of learning a language and of making it a permanent possession.

Even the rank and file of teachers of languages turn to their own for refreshment, and will read a good translation of a classic in preference to the original; and of college graduates who are not teachers, fewer still read in a foreign tongue anything which they can read in their own. To spend from six to ten years at Latin and Greek and yet make no direct use of them through life seems to be an enormous waste, a pitiful misapplication of energy. The culture value of linguistic studies must be large, indeed, to justify such expenditure and such results—the more so as all the greatest works have been translated, and to the average college graduate the translation mani-

festly gives more thought and more charm than does the original.

Moreover, these great languages and all that they embody of profound thought and of linguistic charm are themselves the products of peoples who, for the most part, knew no tongue but their own. Was that limitation one factor in producing the excellence which we moderns praise? What would be lost from modern culture if Greek and Latin were dropped entirely from our secondary schools and retained in colleges as specialties, on a par with Sanscrit and Hebrew, and the time now given to them occupied in minute studies of the social life, art, and literature of those peoples, and in a more thorough acquaintance with modern languages?

The fact that Latin and Greek have survived through so many centuries and that still so many students choose them is unaccounted for. Fashion in education can hardly be so great a tyrant. If there be something in the nature of man, in the qualities of these languages, and in the disciplinary value of such intimate, long-continued contact with those qualities, which justifies the retention of their present importance in our schools, let them be begun in childhood, and pursued in such a manner that they shall become vital, permanent possessions.

For want of possession of knowledge adequate to such an undertaking—for the knowledge possessed opportunity for experimentation could have been found or made—the writer has been able to dream only of what might be done in the teach-

ing of languages; and this dream has always included the beginning, before the twelfth year, of five languages—English, German, French, Latin, and Greek.

Begin in the kindergarten with the child's mother-tongue, soon introduce one foreign tongue, and others at intervals of one or two years. At the beginning of each new language, by aid of maps, models, sculpture, pictures, etc., fill the child's mind as much as possible with pictures of the life and environment of the people whose expressions they are to learn. Then let a sentence whose ideas have interesting associations to the children be spoken and written in all the languages thus far learned; and to these should be added its oral and written expression in the new tongue. Thus slowly, step by step, use what has been already acquired, and add the new expressions, until the child uses one language as easily as another, and possesses a fair command of the five.

A class of children taught in this manner would travel the earth over in learning to read; for in addition to what has been suggested, the wanderings, colonial settlements, and historical movement of these peoples should be given bit by bit, in fresh narratives week by week.

As familiarity grew, the five school-days of the week could be each given to one language, and all work for that day conducted in that tongue. The daily lessons would be the same, but teacher and children would for that day be Greeks, Romans, Germans, French, or English; so should



they become in speech citizens, in a narrow sense, of the whole world, both in time and space.

That no teacher knows enough to teach language in this manner is nothing against the ideal worth of the plan. A demand would create a supply; and a demand can come only from an intelligent understanding of the values of linguistic studies, and of the best means by which to realize those values with the minimum of effort and a maximum result to the child.

In all use of language care should be taken that a child neither hear nor see error, and discriminative criticism should not be asked until the student's own usage approximates excellence. The aim should be to form in the child's consciousness a standard of good usage that is so fixed and incorruptible that he is unconscious of it, save when violations of it occur outside himself and jar on his sensibilities.

This is meant to include what is essential to a fair degree of accuracy and charm in spoken and written speech—delicate enunciation in sound, length of syllables, and accent; correct idiomatic and syntactical forms; quick perception in choice of the meanings of words and phrases; felicity in the arrangement of words, phrases, and sentences, and of grouping in paragraphs; spelling, use of capitals, and punctuation.

During the first school years the child should imbibe these excellences unconsciously—learning correct usage as he learns to speak, read, and write a given tongue, because he has in the school-room no acquaintance with incorrect usage.



To give a child the permanent possession of right standards and measures of value is the chief concern; not to have him make use of such as he can temporarily grasp and hesitatingly apply. He has before him a lifetime of application; his first need is firm possession of the thing to be applied—a personal, unconscious habit of good usage.

Good usage in language rests upon good usage in thought. Accurate, clear-cut, finished, logical, and well-arranged thought should be the aim in all departments of study; and in proportion as this aim is realized will the habit of good usage in any language be more easily acquired. Finish in thought insures that a child use what vocabulary he has to its best advantage; and by listening to a child when at play, a teacher can soon determine whether habitual faulty speech in the class-room comes from faulty thought or from ignorance of words and their uses. If the latter, the correction is of the form, not of the vital essence of language.

Each language must express some variation in human thought, some change in mental functions. Suppose, for instance, that an inflected tongue represents a phase when the relation is not detached from the thing related, either in time or space; and that one not inflected marks an extreme of individuality of ideas, a greater analytic power, where detachment and isolation are extreme.

If the differentiating characteristics in the mental functions or thought processes of a given peo-

ple could be determined and isolated so that they could be intelligently grasped by a student, and by effort he could learn to take them on as his own, the learning of the language of that people—to an adult, surely—would be a comparatively easy task.

## MATHEMATICS

MATHEMATICAL ideas and principles are comparatively few and easy of understanding, while the computations which may be based upon them are numberless and often exceedingly complex, varied, and tedious. It is the former—the ideas and principles—which teachers should aim to give to children, rather than facility in the solving of puzzles and in rapid computation.

Rapid computation is required in certain occupations; but when a youth enters on such an occupation he can acquire this skill, just as he can and does any other purely technical facility which the majority of men neither possess nor need.

The mathematical ideas and principles which can be grasped and intelligently comprehended at any given school age are, compared with those which may be taken from almost any other study, very few; hence, small as is the actual bulk of all known mathematical ideas and principles, the study must extend over the entire school life, from kindergarten to the highest graduate work.

What the average child's mind can grasp and intelligently use of mathematical ideas and principles before the age of fourteen can be taught to

him in a single year; and all that he is able to understand—the average student is meant—from fourteen to college age in another year.

The average of persons who are at once thoughtful and intelligent will probably find, on reflection, that they manipulated mathematical processes in school long before they had an intelligent grasp of the real meanings underlying those processes; and no matter how carefully and objectively those processes were explained or “developed” step by step, the actual comprehension eluded the mental grasp, and there remained in the mind the husk only of facility in manipulation.

A baby’s hand fails to grasp what a well-grown hand can completely cover; so there are mathematical ideas usually taught in primary grades which the average mind cannot grasp before the age of fourteen.

This is, perhaps, the chief reason why the results of mathematical studies in our schools are so out of proportion to the time and effort spent upon them. Every teacher of children knows that mathematical ideas fall away from the child’s memory very fast, and can be kept there at all only by constant repetition and illustration in manipulating processes. This of itself is sufficient to show the inability of the mind to incorporate the ideas as integral parts of its permanent furnishing.

The average mind learns a mathematical process with extreme quickness when so far developed as to easily and quickly grasp the ideas and prin-

ciples that are involved in the process; and the time now spent in schools on processes whose principles cannot yet be comprehended is mostly sheer waste.

To stop this waste is the duty of every one who has interest in the preservation and development of a sound nervous system in a child; for there is no more nagging, nerve-destroying thing than to be obliged, day after day, to do mental work that has no meaning and presumably leaves no result in the actual enlargement and modification of nerve substance.

To set an adult to learning Greek, Hebrew, or Sanscrit without allowing him to know the meaning of the words, and insist that he shall remember the proper order, arrangement, and inflection of the words so well that, given a jumble or puzzle of words, he shall be able to make a complete and intelligent sentence, and yet not know the meaning of it when made—this would be somewhat analogous to and but little more unreasonable than what children are often set to doing in mathematics through all the grades of our schools.

Not only the ideas and principles, but the processes which the majority of children have occasion to use before the age of fourteen can be taught in the one year; and all combinations of those processes which are likely to arise in actual experience out of school and in other studies could be taught in probably one month of each other school year.

If a few things were well done in a short time, and the child left thereafter to such mathematical

experiences as arise in other studies and in his outside life, the child would have not only all the mathematics he would need or use, but a large amount of school time and mental energy to be spent on other studies.

That many children leave school early does not change the matter, save to make the case still worse against present practice; for what is not comprehended drops away, and the child's school time, so short, so precious, has been wasted, and he defrauded of other knowledge which he might have gained and kept.

If the average adult will examine and set down the mathematical ideas and processes which he uses from year's end to year's end, he will be surprised to find them nothing more, ordinarily, than amplifications of what can be taught in the first primary year (see Part I., Chapter I., page 4); and the exceptions that arise in ten years could be learned in a single week, so that the child who leaves school before the age of fourteen would not usually need to blush for mathematical ignorance if taught no more than is suggested for that year, provided that he had sufficient, recurrent practice not to forget.

It is not meant to imply that mathematics have no culture value, but that their culture value can be realized best when the mind is able to assimilate and appreciate them; that present practice harms every child by diverting his time and energies from culture that he can assimilate; and that this loss falls most heavily on the child who leaves school early.

Educators have agreed to banish the old spelling-books, with their lists of long, difficult, and technical words; perhaps future educators will banish to the same limbo the present arithmetics, and for similar reasons.

This book recommends: that mathematics be taught as a subject of study at long intervals only, through all the years up to college age; that during the intervals it shall come up for use or discussion when needed in other studies only, and then only so far as needed; that stress shall be laid on ideas and principles rather than on processes; that such processes only shall be taught as are likely to be required in the child's daily experiences, and shall not involve numbers or complex conditions much beyond what such experiences are likely to be. Technical, trade, and business schools would need to do more work in mathematics; but in them the same principles might be followed of confining the extent and complexity of the work to the actual requirements of the occupations pursued, until the student's mind had, through other studies and contact with life, developed beyond the point of merely grasping and holding a process for temporary use to the point of intelligent assimilation of the ideas and principles involved.

Every child is a natural symbolist—a corn-cob with a dress on it will do for a baby, and a stick with no additions for a horse. To let one thing stand for another is as easy to a child as to breathe. Advantage of this can be taken to teach comprehensive formulæ.  $a+b=c$  should be the

child's general expression for addition from the first primary year. Moreover, he more easily grasps the general idea of putting together than he works out the details of a special case. Give him  $a+b=c$  as an expression of putting together in one mass what had been before in two or more masses of the same stuff, and, when a special case comes up, teach him to put the given details in proper succession under the letters of this formula, using the formula at each combination of two masses until the whole are added, how many-soever there be. In a short time, by this means alone, there will be formed in his mind an ineradicable impression of the distinction between a general conception and a particular case.

As easily may he be taught to distinguish the ideas of known and unknown quantities, and designate them as such in the simplest processes. In scientific studies he will early come in contact with the ideas of constant and variable, continuous and discontinuous, and of limit. In industrial work, greater, less, equal, and equivalent will have continual illustration. All the axioms used or illustrated in elementary mathematics can be easily taught in a living concrete way in connection with industrial work. Opportunities are abundant—at least, would be in an ideal school—of teaching by contact with actual phenomena every mathematical idea and principle required to enter upon college studies—more than the average freshman has—without the child's knowing he is studying mathematics, simply by bringing out the full meaning of the phenomena when an opportunity



presents itself, and then giving the child, whatever his age, the mathematician's terms and formulæ for that meaning.

Children are perpetually basing their plays on hypotheses. They say, "Let us play that it is so and so"; and having settled the limits of their assumption, they proceed to work out details according to it. This shows how easily they can grasp the distinction between an assumption and a fact; and how readily they could be led to appreciate the notion of a working hypothesis, and of the limitations which it imposes.

To make early use of such native possibilities by turning them to account in school studies would lay foundations of clear distinctions that are sometimes hard to attain in later life, and would be a gift to any mind of immensely greater value than quick facility in mathematical computations.

The arbitrary character of all symbols may be impressed by leading the child to construct a cipher alphabet and digits. Let each child construct one for himself, write sentences, and make computations. Show him how business men in all shops mark their wares. A little work in this line will emancipate the child's mind from bondage to symbols, and help to form the habit of seeking real meanings, and of regarding all symbols as merely convenient devices for using, conveying, and manipulating meanings.

Factoring is easy of comprehension, and from it to the involution and evolution of roots is a short step. Confined to easy numbers and simple

processes, these can be given early, and should, from the first, be associated with appropriate symbols and technical terms.

The characteristics of some curves, the plotting and drawing of them and their use in science, could be taught even in the first primary year; then how much more easily when an occasion in other studies makes their understanding and use desirable!

It should be borne in mind that all higher problems are made up of simpler elements; that these elements rest upon still simpler ideas and principles; and that these fundamental ideas and principles can be separately grasped by a child and made part of the permanent stuff of his mind long before he can hold in the focus of consciousness the combination of elements, formulæ, processes, and abstract conceptions necessary to the manipulation and solution of complex problems. That which a child can take through natural associations with his experiences in life or in other studies, give him freely at any age; but do not waste his years and energies on processes of calculation, or in trying to instil complexities which the focus of his consciousness will not cover.

This chapter is not meant to be anything more than suggestive; for its ideas have not been tested by experiment in the school-room by the writer beyond what is narrated in Part I., pages 16-21.

## VI

### INDUSTRIAL TRAINING

AN ideal school might be a world in miniature, where all occupations which are essential to the comfort and beauty of man's existence are represented on a scale that is appropriate to the age of the children to be taught.

Handicraft brings about the co-ordination of all the senses of man, and that co-ordination is complete only when great skill has been reached. Complete co-ordination in one form of skill gives no assurance of appreciable co-ordination in another; so that to reach the co-ordinations which are possible to man at present he should practise as many handicrafts as possible.

Man develops individually along the lines of the general need, and, save in the rare instances of advance to another level, he has no other means of development.

The co-ordination of the senses into one act means the gathering into one focus of many avenues of stimulation, and the power to control and to use that focus effectively when formed.

Modern psychology seems to tend to the notion that mental processes, even to the most abstract thought, depend upon physical processes, upon the

happy combination of certain groups of nerves and muscles. Whatever of truth there is in this notion tends to confirm the necessity of industrial training for all students from childhood up; for the co-ordination of the senses into one act of skill means the delicate adjustment and balance of many nerves and muscles. To give a child activities where not only such adjustments must be made, but where the least flaw in the adjustment expresses itself at once in the result, would develop the capacity to make approximately flawless adjustments. The child himself cannot fail to see the flaw, and in the effort to remove or overcome it the habit of the flawless adjustment is made.

Such results as this, in the co-ordinate activities of nerves and muscles, can be at present gained in no way so quickly or surely as in the various handicrafts; and, if the psychologists are even one-half right, the gaining of skill in handicraft is certainly an aid and may be an essential step in true processes of thought.

Certain it is that our scientists are our most exact thinkers; and they, one and all, must, to reach eminence in their fields, have acquired very great skill in at least one sort of physical manipulation.

If these ideas seem far-fetched, let the reader reflect that no one is without some handicraft skill, some power to co-ordinate nerves and muscles into an approximately perfect act. The care of the person requires it; the act of writing is a very delicate adjustment of this sort.

Whether the average man performs enough of

such acts, or has from childhood acquired enough co-ordinations to account for all the thinking of which he is capable, is a question which need not concern us here. Certain it is that the average man's thought is not skilful; it partakes, usually, of the uncertain, slovenly, haphazard qualities which characterize untrained physical movements. He cannot be depended upon to make a focus in his consciousness of all the knowledge which he has and ought reasonably to be expected to bring to bear on the given point or question before his mind.

Take another point of view—that of another school of psychologists. Suppose the physical being of man stands between its exterior environment and a soul or entity who is independent of it in existence, but dependent upon it for expression of itself in our common life; and that stimulation and co-ordination of nerves and muscles may arise from within—that is, be initiated by and from the soul—as well as from without or the environment. Suppose, further, that the co-ordinations which arise from stimulations from either source are always at first adjusted—that is, determined—by the soul. It would be to the advantage of such an entity to have as many co-ordinations as possible established in the permanent structure of the physical organism, so that its attention could be given mainly to the general movement of the thought or of the physical activity, without dissipation in the small details of that movement; and since man's sense organs are a part of the mechanism which such a soul

uses, activities whose co-ordinations depend directly on those organs must necessarily aid the formation of habits of flawless co-ordination.

From almost any point of view, handicraft stands out as essential to the complete development of the mind of man; and for such development the range of activities in handicraft can hardly be too wide or too varied, so long as each is pursued to the point of skill.

This mental effect involves a moral effect. Most of the lies and deceit in the world come from slovenly thinking, and most mistakes, too, can usually be traced to the same source. To focus the whole mind to one given point, and to hold that focus in consciousness until all the threads of knowledge and of experience that are combined in that focus have each had its due effect—this is attained by the few wise only. Most men act now from one impulse, now from another, rarely from the whole being or with the consciousness and consent of the whole.

To make the various handicrafts integral parts of every school, so that the student from the kindergarten up shall be as familiar with tools as with books, and turn out articles in physical substance as often as he does compositions—this would inevitably work a change in our social structure.

Scorn of manual labor would give place to respect for that labor, and personal skill in the gifted and well-to-do would elevate the standards of such labor. The physical laborer would take his rightful place as an integral and equally honored

part of the social whole with his brother, the mental laborer; and to neither would be denied the privilege of sharing the other's tasks.

The present division of society into the manual laborer and the non-manual laborer, with all the social consequences thereof, is mainly artificial. Many an idler, mental dabbler, and professional man has locked within him special aptitude for taste and skill in handicraft; but should he leave his present occupation, or lack of occupation, to give those aptitudes the severe training which alone brings skill, and then exercise that skill as common laborers do, he would suffer degradation in the social eyes of even fair-minded and otherwise sensible people.

There are always reasons even for the seeming vagaries of the social consciousness; and it is true that supreme skill or excellence is usually recognized and honored by the highest social thought in our own land. Perhaps the past and present attitudes towards physical labor have been necessary to keep skill from settling into mediocrity, and to force on it perpetual change and growth; but the notion that he who reaches less than a supreme skill, or uses skill for gain in the ordinary markets, is disgraced and not ennobled by his skill may have paralyzed the natural bent of a good many men and women, and made useless or mediocre social units that might have been otherwise.

On the other hand, the limitation of nearly all forms of mechanical labor to the poor, and the social conditions that force them to follow such labor from childhood or starve, are responsible for

choking in the poor whatever riches of mental aptitudes they possess.

An education which includes both the mental and the physical, and gives to each child, regardless of his present wealth or prospects of wealth, as much skill in forms of manual labor as in the various branches of the present studies—this would, in time, do something towards making the distinctions between the manual and the mental laborers natural, the outgrowth of inherent aptitudes, instead of, as at present, the accident of birth or of opportunity. Society would then have the products of all her native capacities turned to their best uses, and be a gainer thereby; for the present usage wastes power at both ends of the social line, and all along the line.

The cause of present practice in this matter is deep—it is the measure of worth which the universal consciousness recognizes as worth. That measure should be being; and it seems thus far to have been, and to now be, doing and having. Perhaps this is because man has been, thus far in known human history, so absorbed in gathering from and subduing his environment that he has had little leisure to think of that which gathers and subdues. Yet the fact that doing in material substance is dishonored in the bulk is a recognition that something is more honorable; and when man has taken the further step of dishonoring the having of material substance, and riches are relegated to the mentally poor, he will have reached the point of discerning being as apart from doing and having—being, the one



thing which a man brings to and may take from his brief term of physical existence as we now know it.

Before the age of twelve no child should be set to work at any handicraft that requires minute inspection of or attention to small points of detail. All forms of needlework (except, perhaps, that on the old-fashioned cardboard with large holes and wide spaces), most wood-carving, and much modelling are objectionable on this account. Work with glazed papers and with metals, especially hammered work in brass, is objectionable because of the glare of light from the materials; and for a similar reason materials in strongly pronounced colors should be avoided.

The eye is a very delicate instrument, and its development cannot be too carefully guarded from arrest or ruin. All work that is given to children before the age of twelve should be as large as the child's size and strength will bear, and should involve no detail which may not be easily seen and its accuracy estimated at a minimum distance of eighteen inches from the eye; and at that distance there should be no effort to hold the focus of the eyes long on a minute point. Let the detail to which attention is given, aside from the one detail of accurate measurement, be as large as possible.

The softer woods and clay, being neutral in color, are the best materials for beginning lessons in handicraft; and abundant work in these materials can be arranged which will give the desired results to physical and mental development

without harm to any organ of the child's body, or to his mind through disgust with minute and wearisome detail.

Moreover, the imperfect result of a false or incomplete co-ordination of nerves and muscles in a given act should be so large that the flaw cannot escape the child's own observation. The defect which a child sees plainly he can summon courage enough to remedy or overcome by repeated effort, while a minute detail, which a trained or fastidious eye alone sees, soon exhausts his patience. When a child has become sensitive to imperfection in large details, and conscious of power to make such details perfect, it is easy to gradually lead to such sensitiveness and conscious power through gradation down to the greatest minutiae which the most exacting craft requires. But in this process the eye should not be forgotten, and every child should be protected against conscious and unconscious harm to it.

Household labor, such as cooking, dish-washing, the laying and serving of meals, dusting, arranging furniture and ornaments, washing and ironing, afford excellent opportunities for developing a sensitiveness to that skill which is complete only when its results are both fit—that is, adapted to the purpose—and beautiful, or satisfying to the æsthetic feelings.

Gardening and horticulture appeal to another side of the nature, or rather to the same qualities from different points of view, and have the further advantage that they take the child out of doors. In this labor the child becomes a partner

with the planet, and must wait that partner's movements and learn to work according to universal laws.

Industrial work of various sorts, if properly arranged, could be followed throughout each school year without taking anything from the results in the usual studies; for such labors are so great a delight to the child, and their effects on the mind are so beneficial, that a continuous course in industrial work seems to help the child to carry and assimilate the full burden of mental pursuits with a less expenditure of time and energy than is ordinarily given to them. This may be because of the help which industrial work gives to the power to co-ordinate nerve and muscle into complete accord in movement, and so brings the mind into easy mental action more quickly than any exclusively mental processes can.

A child desires to accomplish something the effects of which he can plainly see. No purely mental pursuit allows the child the full satisfaction of this natural and just demand. The handicrafts do this at every step.

Every child has a kind of integrity which would prefer to deal with real things instead of with imaginary ones if he could; to be a real force that makes, creates, and helps along the necessary work of the world. Industrial training can be made to foster and to train this desirable quality, through so arranging the work that its final results shall be of some use to the child, by satisfying some necessity at school or home, either for himself or another; and let the child plainly

see that every step of the process is essential to that final result. This will give a tangible aim and a reasonable worth to his effort, both of which he can appreciate.

Life has dignity and self-respect in the individual in proportion to the individual's discernment of his use to the social whole. It is desirable to foster the sources of dignity and self-respect from babyhood upward, and for the average child it is doubtful if there are other means of doing this so efficient as industrial education; for if the man may not reach usefulness in other lines, he certainly may in some handicraft. Skill in handicraft thus furnishes something to fall back upon; not to replenish a depleted purse or a ruined bank-account, but an empty self-respect and an exhausted worth.

Since the main object of all industrial training, from the standpoint of the writer, is the perfect co-ordination of nerves and muscles into an effective act, it follows that perfect results at each step can alone guarantee that that object has been realized. This necessitates that the work move along slowly, with repetitions of a detail until that detail is complete; and requires that each individual work and progress without regard to other individuals. This requirement is of itself a source of mental and moral power to the child; for it requires him to exercise mental and moral effort for reasons that he appreciates.

The exercise of a sympathy which would help a child by doing his work or by glossing over his mistakes, in order that the results of his activities

may keep pace with those of some other child, debases the mind and heart of the child. It teaches him to lie consciously and to ignore the fact that he has done so, or makes him content with his inferiority.

Not to do so much as another, or so rapidly, but so perfectly, so beautifully, should be the desire which is to be instilled into a child's heart. The time will come when he must know that he cannot always satisfy this desire; but that knowledge should be kept as far off as possible. At least, it should not be allowed to invade those formative years when no teacher or parent can tell what powers are within the child. Slow and painful development often brings a sure and lovely result; and to each child should be given the benefit of all doubt about so grave a matter as his own future possibilities.

## VII

### MEANS OF EXPRESSION

READING and writing should be regarded not as ends in themselves, but as means of expression; and they should be so presented to the child that he would so regard and so use them from the first day in school.

When a child has command of the movements of hand and arm which are required in a smooth and well-formed handwriting, and such a mental impression of accuracy and elegance in the forms of letters and of their combinations in words that he can be trusted not to forget those forms and combinations, he may be allowed to vary from them to accord with his own taste and nature; but originality should not be allowed to become a cloak for slovenliness. An illegible handwriting should be as great a disgrace as indistinct speech. To take time and pains to form and to finish letters as carefully in writing as sounds in speech is certainly no more than good manners require; and yet men of this generation have for the most part a wretched chirography, with no merits to justify its ugliness, and no real necessities to excuse the careless haste with which it is indulged.

Speech is not much better, save in restricted

circles, and a good reader is rare in any circle. A habit of clear, delicate, and discriminating enunciation and of an agreeable intonation is one of the loveliest gifts which a teacher can bestow upon a child. This habit can be formed in the average child by daily repeated vocal drill continued through all the school years; and, so far as the writer knows, in no other way.

The study of foreign languages helps in this, because such study stimulates attention to fine and subtle discriminations in sound. Music helps too, and is invaluable in bringing out and perfecting the native timbre and possible delicacies of intonation. But only practice in the elegant use of one's own tongue, in speech and oral reading, will suffice for the formation and perfection of such a habit.

Here, as elsewhere, it is the habit of good usage that must be relied on, and not critical power in details of faulty usage.

Free outline drawing should be as common as writing, and as easily handled for uses of expression. This also requires care, drill, and long-continued use, from kindergarten up through all the grades; and this use should come as a natural necessity, in connection with the other studies, just as reading and writing do.

Exercises in reading, writing, and drawing are often so disassociated from one another, and from other studies, that they seem to have no vital relations to thought or to any needs and desires of the child. To regard them as necessary instruments for his own service and delight is the first

thought which a child should have about them ; and that service and delight should not be lost sight of by teacher or child, even in the most exacting drill. Not that the drill must be delightful—it certainly should not be painful—but that the child should recognize it as required by his awkward inefficiency, in order that he may reach the power and possibilities of delight.

The ancient Greeks thought music to have great educational value, as a means of expression and as a source of intellectual and of ethical culture. Music is often spoken of now as having these values ; but there are comparatively few who do not in their practices belie these professions. Even to those who follow it as a profession it seems to be treated, for the most part, as an ornament and an amusement.

On public occasions the music rendered has often no relation or fitness to the surroundings, the persons engaged, or the dignity and worth of the occasion ; is rather an opportunity to show off a voice or technical skill, and, as such, is an intrusion and a jar.

In too many churches and Sunday and day schools throughout our land the so-called music is often noise and jingle which expresses nothing but the barbarism of those who endure it and seem to regard it as an expression of praise, worship, or other fine sentiment. Are not those who think any fine combination of sounds can worthily fit any occasion also far from the mark ?

There is nothing more enjoyable or expressive than fit music fitly rendered ; and by fit is meant



suitable to the occasion, whatever that may be. Music should be to condition and circumstance what words are to ideas, whether the condition and circumstance are primarily from within, as when a person sings or plays to himself, or from without, as when he performs for others ; and this fitness should be in the kind and quality of the music, as well as in the excellence of the performance.

The intuitions of humanity do not so often err in these matters as do the musicians and the professional composers. Men use what is provided, and follow the fashions in vogue in their environments in music as in dress—that is, men use the jingles that they know rather than the nobler music which they have capacity to enjoy but have never heard.

To the public schools must men turn to get this great want developed and provided for ; and not until music is as common and relatively as excellent in our public schools as are reading and writing will the thing be accomplished, and music take its place as an integral part of human life, an essential means of expression and interpretation of man to himself and to his fellows.

The miracles of music have not been wrought by its own power alone. With the Greeks, music as a department of study included poetic literature. Music and literature, in our restricted meanings of these terms, to the Greeks were inseparably associated. It was speech wedded to music that in the songs of Tyrtæus led the Spartans to victory.

The common man needs to know what his sounds mean, in order to have the effect of them definitely directed ; and when that meaning comes in words that stir his blood, and the music fits the words, the combined effect makes it easy for that same common man to dare and to do nobly, even unto death.

Music alone may produce its full effects on the few who are especially sensitive and cultivated, but the average person of all ages and conditions requires for these full effects that suitable words be attached to music as that ideas should be attached to speech ; and when either speech or music is not thus joined to its proper complement its power is weakened, changed, or altogether destroyed.

This makes the literature of music as important as the music itself, in order that indelible associations between noble sounds and noble sentiments shall be wrought into the child mind. Of all the literature associated with music, how much is worthy to live as literature ? Too often, on a great occasion, when thousands are gathered, are all the resources of musical art in fine instruments and famous singers employed to sing literature so unworthy that a street gamin would blush to be thought capable of admiring it.

Is not this—in part, at least—because men have lost sight of the functions of music as a means of expression, and imagine that to the common mind it can be a matter of supreme indifference what the words are—whether in a known or unknown tongue ; do, re, mi ; hi diddle, did-

dle; or some utterly mawkish or sensual sentiment?

Of all nations, we of the English-speaking peoples are most inexcusable for this degradation of song by unworthy associations. There is need of a reformer to do for our song world what Wagner did for the opera—to lift it to a higher level, and to consider as carefully what is to be expressed as how.

Such reform to be lasting must be founded in our public schools, and in them must great literature and great melodies be associated; and when from cradle up a generation of men have listened to and sung such songs, there will, perhaps, be an increase of that quality of living which a man need not be ashamed of.

Modelling, sculpture, painting, and all handicrafts are means of expression, and are so used to some extent. Doubtless machinery has repressed the creative and expressive instinct a good deal; but when man as a whole has become the master and is no longer the slave of his machine, whatever powers have been buried in factories and mills will find their resurrection. For it may be presumed that nature is not wholly dependent on the individual; having failed of one outlet, she can doubtless make another.

An ideal school would give ample opportunity for creative talent and for any other form of self-expression of which a given child is capable; but in schools as they are a little is done along these lines, and more can be.

It remains to speak of physical culture as a

means of expression. Developing the body to its utmost capacity for health and strength does not necessarily make it an adequate instrument for self-expression. It is not to be supposed that nature has no misfits, and that a healthful adjustment of the physical, vital forces is all that is required for the ease and comfort of the body's tenant. Rather is it more probable that every body is, to some extent, a misfit, and that many souls go about like princes in tatters or in somebody else's clothes. Certain it is that rare are the hours, to most of us, when the body perfectly renders the inward thought and condition. It is a stolid thing of nerves and muscles, responding slowly and uncertainly to the swiftly flowing and transforming moods of the soul.

To make it somewhat less stolid and more responsive should be the aim of the teacher of little children. Natural ease and expressive grace of posture and movement are often seen in children, but more rarely in adults. To preserve the native ease and grace, to develop and add to them, and to bring them into conscious possession with the meanings which they convey—this should be done; and something towards it may be done in every school-room in our land.

Let children try to give soundless expression to their ideas, both of intellection and of emotion, until they are quick at pantomime and quick at reading the meanings of the pantomimic efforts of others. At first, give them the aid of objects; later, require the expression to be completed by their own bodies alone, until they handle their

bodies with the same ready precision to express an idea that they do words to form sentences for such expression.

In the present state of knowledge about the body as a means of expression, care must be exercised lest stereotyped forms are taught. A teacher's best models, provided he cannot himself have the instruction of a competent master, are children at their games and men and women in unconscious action. A habit of observation, supplemented by effort to reproduce in one's person what has been observed, will soon give a teacher much material for these exercises and a fair degree of critical judgment.

It may be asked of what use are these exercises and accomplishments when habits have been formed. Surely anything which makes a man master of his body as a means of expression has put a valuable power in his possession. Furthermore, it is urged by teachers of physical culture that all exercises react upon the inner self; so that to take a noble posture is to receive a stimulus to noble feeling and thought as truly as to read a noble sentiment. In so far as posture is or can be an exact expression of thought this may be true, whether a child be able to analyze and understand the stimulus and his reaction on it or not.

A study of means of expression conducted according to scientific methods will form a habit of attention to and interest in those means, and such attention and interest must increase a man's knowledge of himself and of his neighbor, than which few things are more desirable.

Ultimately every man lives in solitude, and with difficulty does he imperfectly impart his own intellectual and emotional states to his neighbors or apprehend theirs. A man knows his own experiences, and he knows little more. The form, limits, and quality of his neighbor's thought he guesses at but does not know. He may try to repeat his neighbor's experience, but he cannot know whether the repetition is exactly like the original or not. He forms judgments about his neighbor and acts upon those judgments; but those judgments are based mainly not upon knowledge of his neighbor but of himself. The fact that he cannot lay a piece of his mind over a corresponding piece of his neighbor's mind and see how they fit; cannot exactly experience his neighbor's experience, neither in the small nor in the great—this fact should be brought to consciousness in every child; and one way of doing it is through these exercises in expression, for the child will soon observe that the expressions and their interpretations are approximations only, and never quite satisfactory to either party.

Courage is the backbone of character, and so long as it is mainly gristle the character is not of much worth. To realize one's solitude and accept it, even as a child can do, is to begin to deposit bone in the gristle. To realize one's ignorance about one's neighbor, and to act sincerely from that realization, is to begin to stand upright. To do unto one's neighbor as one would wish one's neighbor to do unto him is to realize and do but half the truth. One's neighbor is not one's self;

and one may find—nay, frequently does find—that his neighbor does not wish or need the same treatment that he himself does. One's neighbor sometimes wishes and needs conduct towards him that one would not willingly receive from any one; so that it is not alone what one wishes unto himself in like circumstances, but what his neighbor also wishes, that should influence conduct towards one's neighbor. To have realized this fact is to have accepted both the solitude and the ignorance. To act upon this acceptance requires a continual study of one's neighbor—a looking outward for motives and forms of conduct as well as inward.

This looking outward will avail only when what is seen is truly interpreted; and here again most men are thrown back upon self, until, through many a knock for false interpretation, one is at last educated to a sort of understanding, at least to acceptance as fact, of that which one does not experience.

When men are sufficiently developed it is to be hoped that they will not ask such hard tasks of one another, and perhaps then the "golden rule" alone will be a sufficient guide; but it is not now, and it is the present which the child must be educated up to.

Do unto thyself what thy own nature approves and needs; unto thy neighbor what his nature desires and needs. This is to be free, and to leave one's neighbor free.

To do loathsome physical tasks for one's neighbor has long been regarded as a meritorious ac-

complishment; to do as loathsome intellectual and ethical tasks—fully conscious that they are loathsome—is a height man has not aspired to consciously (save among the Jesuits, where it may be doubted whether the act was or is understood as here meant), although it has been reached by individuals here and there from time immemorial. Strangely enough, when these cases have been understood they have been regarded as proofs of a high degree of love; and the hard righteousness that has let one's neighbor suffer rather than sin for him has not won universal applause.

A man's conscience is *his* measure, to be used in his own affairs as rigidly as he pleases; but it is sometimes injustice as well as "bad form" to force it on his neighbor, to that neighbor's discomfort and loss. Perhaps conscience is partly an intellectual and ethical fastidiousness, for it has changed from age to age quite as much as physical fastidiousness has; and it would be well for children to get some inkling of this fact, and learn to regard his neighbor's conscience as possibly quite as respectable as his own.

A man's self flows from the tip of his pen or fingers, or vibrates in the tones of his voice or the movements of his body, only when all means of expression have passed beyond the rudimentary stages of conveying thought merely, and have become vehicles of expression for the sum total of his understanding.

It is this sum total which a man's gait, posture, and various physical movements should express,



but which they do express rarely. Judged from his conduct, man is not so much an entity as a combination of entities, all using the one body as a vehicle of action and expression; and on supreme occasions only does there seem to be a focus or concentration of all the entities in one act. It is this which makes the expression of the self and the judgment of others so crude and inadequate until after long training of self and long and intimate acquaintance with another.

The study and practice of the various means of expression will do something towards restraining and refining both expressions and judgments, and so produce beneficial social and moral results through the formation of a habit of allowing a man the benefit of all that he is, rather than of estimating him from one or two facets of his being.

It is conceivable that this training might be carried so far that a person could take on at will his neighbor's forms of expression at any given moment by adjustments of his own nerves and muscles, and, by noting the effect upon himself, make a shrewd guess about his neighbor's sensibilities and reactions at that moment. Even such facility could guess only; for that which reacts in one's neighbor would still be unknown.

What is desirable and to be sought in the average child's development is not such skill, but a habit of trying to understand the meaning of his own nervo-muscular combinations, and of noting the quality and probable meaning of those which he sees in his neighbor.

A man is not infrequently awkward because he

has not learned a graceful way of doing the thing required, and not because his intention is awkward. Slowness of wits and lack of power over the body keep many a kind and gracious act from realization. Malicious or intentional unkindness or rudeness is so rare that if we studied our neighbors instead of ourselves we should have small excuse for complaint.

It is the habit of so understanding the meaning of, and possessing power of control over, the expression of one's self as to select and use the most desirable expression in any given case, and of studying one's neighbor, and of trying to get at his real intention and his reasons for having that intention, which these exercises in means of expression should have for ultimate aim, in order that the child may be prepared to be understood and to go gently through the world.

## VIII

### AT HOME \*

A ROBIN teaches its own young to fly ; a human mother often leaves the training of her babies exclusively to others. The bond of nature between the mother and child puts a premium on all that the mother does, and her constant association is an opportunity for understanding the peculiarities and needs of the child such as no ordinary teacher ever obtains.

As one's finger may trace in the yielding soil a channel for the outflow of a tiny spring, and at its fountain-head determine the course of a river, so in the earliest years the mother may, with little effort, give direction to the energies of the child. The mother's capacities, education, and circumstances may not permit her to accompany the child far on its course, or to contribute much to the current of its intellectual life ; but let her give the direction and all the powers of nature will conspire with the child's inborn force to increase the volume and strength of the onrushing stream.

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To claim for natural-science studies the mother's power of direction, to show why mothers should interest their children in these studies, and to suggest how they may do so, is the purpose of this chapter.

What mothers may do to interest children in natural science is a question which has but one answer—they may do everything; what mothers can do has as many answers as there are mothers. Between the may and the can is but one barrier—difficult to destroy—the mother's own habits of thought. Not ignorance, not scarcity of materials, not want of books—not all of these combined need long block the way of any mother whose mind still has the suppleness and sincerity of childhood; for the door into this kingdom of nature, like that into the kingdom of righteousness, is the simplicity of childhood.

It would be well, in these days of the supremacy of the material life and of increasing demands for applied science, if young women who are pursuing courses at our colleges would more often elect science studies, that they may be ready, by power to teach and by assistance and appreciation given to others, to further the introduction and pursuit of science studies in the lower schools, and to do this in a manner which shall help to put science in its true place as the handmaid and not the destroyer of religion.

But it is to those who have passed their school and college days that this chapter is addressed. As no body gets so stiff that proper treatment cannot restore some of its lost pliancy, so no mind

is so helplessly set that it cannot be drawn forth and directed into other molds. What a mother can do to interest her children in natural science depends upon her power to direct herself and to master the conditions of her life. Suppose that power is sufficient, how shall she begin? A mother may think that she needs trained guides, lest she make mistakes and waste precious time and strength. She may wish to know what materials to collect, what books to buy, when and where to get the materials and books, how much time and money they will cost, and what she is to do with them when obtained. Every mother has a right to ask these questions of any one who urges her to undertake to awaken in her children a vital interest in Nature's phenomena; but all that the writer can hope to do is to give suggestions which may lead a mother to find elsewhere the definite answers required.

A mother may begin to study with her children the ever-changing phenomena that surround daily life. The house is full of lessons. Various departments of science have contributed to its building and furnishing. There is scarcely an industry that is not represented in some room. The kitchen is a laboratory in which the truths of chemistry and physics are illustrated, and the table is supplied with gifts from the three kingdoms of nature; and to produce these, to transport them, and to prepare them for use, numberless natural agents have worked tirelessly and long. And out of doors—Nature's phenomena—where are they not? The snow and rain bring them; the ice locks them

across the pond, and the south wind picks the lock ; the breezes blow them, the birds sing them, the brooks murmur them. Every tree and flower, every stone and clod, wait to tell their story. The waves wash their treasures to the shore. The rainbow is their expression. The glories of morning and evening write them on the sky. The sunlight comes and goes, bringing the wonders of night and day, of storms and seasons ; and all night the stars speak of times and spaces our mathematics cannot yet compute and of events before which our short earth-lives shrink into nothingness.

What shall a mother take from this vast store to give to her children? Before answering this question it is proper to consider what purpose natural-science studies may serve in the education of a child, and to do this the objects of education itself must be known. The supreme object of education is, without doubt, the development of the individual to the utmost limits his consciousness can grasp in this earth-life. Some of the lesser objects are a vocation and success in it, pleasant social relations, ability to help the unfortunate, interest in national affairs, and a love of the virtues ; and all these may be included under the expression to be a good citizen. These objects imply health and industry, that the man or woman may be a producer and not a consumer only ; sufficient intelligence to recognize and perform duties to one's self, to one's neighbors, and to the State ; speech which is honorable and pure, and deeds which inculcate respect for the laws. Besides these a mother may wish her child to acquire those graces

of mind and heart that are difficult to define in words, but whose presence or absence is easy to feel in a man or woman; those graces which lift their possessor above the power of petty passions, of foolish conventionalities, above even the necessity to forgive injuries.

Emerson, in speaking of Lincoln, said: "His heart was as great as the world, but in it there was no room for the memory of a wrong." From the days of early manhood to the crowning act of his life, what a succession of kindly deeds are found in Lincoln's history! As the mind dwells on them the great Proclamation is seen to be but the consummate flower on a plant which could bear no other. Such men do not fail when the time for great action comes. They do without fear what lesser men shrink from or dally with until the time for action has passed. No small soul, no life full of petty motives, ever rises to a great emergency. To one who meets the details of every-day life with a vain, selfish spirit the great occasion may come; but his will not be the honor of seeing it and of using it worthily. So if a mother would have her children become men and women of the larger type she must look well to "the reiterated choice of good or evil which gradually determines character."

What can natural sciences do towards this character-building? Have not studies other uses? Yes; but, while serving other uses, a study which does not mold character is of small value. This character-building receives little or no consideration in much that passes for education—a mistake from

which the whole after-life of the child suffers. There is at present a "craze for information," as though to be a storehouse of facts were a thing desirable in itself. Information so assimilated as to be a source of ready power in thought and conduct is a great good, but unless so available it is of little value. The mere desire for getting information might well be called intellectual avarice, for he who seeks this alone is almost as useless and miserable as the more sordid hoarder of money. Also, there is an idea somewhat current in these days that for children study should be transformed into play. I must protest against any such notion. Hard, patient, honest work is needed. The child who plays at his studies will play at life, play at everything, and will probably carry from cradle to grave the deception that whatever does not furnish him amusement is of no value, that work belongs of right only to those miserable beings who have little capacity for amusement. There should be much delight in study, but there will be disagreeable drudgery as well, and any training is false which does not teach the child to do the drudgery promptly and faithfully. A mother who saves her child from disagreeable tasks does him the grave injury of sending him forth into adult life without the fixed habits which will enable him to meet its responsibilities with ease and dignity.

For this development of a child into a worthy man or woman natural-science studies have peculiar fitness. To secure and preserve health, considerable knowledge of these studies is a necessity ;



and their relations to preparation for self-support are obvious. In the proper pursuit of natural-science studies the capacities for accurate observation, for painstaking experiment, and for unbiassed sincerity are developed; and without these capacities there can be no true progress in them. A slight prejudice introduced as a factor in estimating a series of observations will vitiate the result, and may ruin the value of the whole work. Natural-science studies are as exact as mathematics in demanding obedience to their own laws. Reflection upon these considerations will show their value for intellectual development and training. The moral and spiritual influence of these studies is not less great. A child learns to be truthful in the presence of truth that never swerves; learns to be gentle when at work, where one rude touch may destroy the labor of weeks; to be brave when he sees the struggle which everything in Nature makes for its own development; to be patient in waiting for Nature's slow processes; persevering when he sees that she gives up her secrets after repeated efforts only, often to be made under circumstances appalling to a spirit less mighty than her own; modest when he and his little come into daily comparison with her and her abundance; obedient when he sees that obedience to law brings beauty, pleasure, and life, and disobedience brings deformity, sorrow, and death; reverent before the majesty and power and glory of Him who is the life of Nature; generous, because she pours out her whole wealth to-day, never fearing that the morrow will care for itself; joyous,

because above all her struggle and pain rises a perpetual pæan of triumph.

If convinced that natural-science studies have special fitness for the training of children, with what study shall a mother begin to work? Although Nature herself indicates an order which may be pursued with advantage, this order is not so important that it need be attempted where conditions do not favor it. This order takes, first, rocks and soils, with enough of chemistry and physics to explain some processes of soil and rock making; second, plants, as depending on soil, air, and sunlight; third, animal life; and, fourth, man's structure. After this order has been observed through an elementary course—enough to give a hint of the cycle of change from the rock world through the soil, plant, and animal, back to soil and rock again, to show the intimate dependence of Nature's kingdoms and processes—these studies may be carried on together, a few weeks of each year being devoted to each one. This may be done until the student has reached the years when he may wisely devote himself to one branch as a specialty. Attention to the whole cycle of Nature is not inconsistent with thoroughness, since the little that is selected from each part may be thoroughly studied. A little work well done is of more value than to run over the whole field superficially, not only to the contents of the child's mind, but to his growth in character.

It matters little where one begins, so that the study be honest and thorough. Any beginning will lead everywhere else, for, though there are

straight roads for the specialists to follow, the whole field is covered by a most intricate network of roads. A mother may begin where her present knowledge is least liable to blunder. If she had a fondness for physics in her school days, let her take that. Let her teach her child the laws of mechanics as illustrated in his daily life and observations. Let her teach him to drive a nail properly, and she teaches him to avoid the working of the law of the wedge; teach him how the windows are hung, and she introduces him to weights and pulleys; show him a man unloading a barrel of flour at the door, and she shows him the inclined plane; in teaching him to use a pair of scales, a can-opener, a claw-hammer, a nut-cracker, she teaches him the use of levers. The wheel and axle may be taught from the well or the clock.

The properties of bodies and the laws of expansion and contraction find abundant illustration in the daily life. Let the child fill an old jug with water, cork it tightly, and set it out of doors some cold night. The break found the next morning will not be forgotten. Then take him to a neighboring ledge of rock; show him its cracks filled with ice, and he will not be slow to draw the lesson of how the strong rocks are broken asunder. Then show the child the tiny snow-flake with its six crystal arms, so delicate that you hold your breath lest they vanish while you look; and lead him to see that the jug and the mighty ledge of rocks are broken by these fairy creatures. What tale in mythology or folk-lore is more wonderful

than this? In every drop of water is the fairy crystal spirit, but it cannot embody itself where heat is. Cold is its good genius; and when cold comes the fairy spirit works, throwing out one dainty spar after another and interlacing them with threads more delicate than those in our finest laces; and the fairy spirit has a body; the crystal exists. But if the water is confined and has not room enough, why, these frail things break the bond, break the jug, break the giant rocks. If this story be well taught the child's soul will bow before it in reverence. He will learn, too, one old but great lesson which may be applied in human affairs—"In union there is strength." The single ice crystal seems powerless; the many do mighty work.

If a mother is fond of chemistry, she has no less a field of work from the combustion of fuel and the burning of the evening lamp to the whole process of cooking, digesting, and assimilating food. Here, too, comes the question of the purity of air, water, and foods. A child may be taught to detect some impurities in all these, and also to test the safety of colors in wall papers and in the fabrics used for clothing and furniture. These are but a few of the many topics close at hand for every mother fond of chemistry. Through all of this work in chemistry the mother has admirable opportunity to impress on the mind of the child the great economy of Nature. As the child sees the wax of the evening candle gradually disappear, he may be made to understand, by a few simple experiments, that some portion of the air

is uniting with the wax; that invisible watery vapor and gas are produced and pass into the air, and that soot is given off. He is then prepared to believe Nature's great law—change, but no loss. The child, once impressed by this law, will find abundant illustrations of it, and will seek to know and understand the changes which produce the seeming losses so constantly occurring.

Perhaps some mother has a preference for astronomy. In warm evenings the little ones may sit out awhile to listen to stories about the stars. No subject is more delightful to a child. The little of the great truths which he can grasp will awaken and broaden his young mind and fill his tiny heart with noble and poetic sentiments.

Botany, zoology, and physiology will suggest fields of work as boundless as they are interesting. It is not necessary to suggest special lines of work in each; but let me urge that the intimate relations of everything studied to the life of man should be kept before the child, so as to cultivate that sympathetic interest which tends to produce gentleness and humanity towards all things. The song-bird rids his garden of insects, and the pretty wayside flower furnishes him medicine. By invisible but real bonds the life of man is united to the lowest animal and the smallest plant.

While it does not greatly matter where a mother begins, it does matter that, as she goes on, the child see relations clearly. Hence arrange the work in logical sequence, and branch off soon into other fields, that the little mind may have a natural, broad base on which to arrange its treasures of

knowledge. All this, too, must be varied according to the age and tastes of the child. Rightly presented, any one of the subjects named will soon win the respect, love, and enthusiasm of any child not hopelessly spoiled by too early dissipation in artificial social life. Such studies are one of the best correctives of this evil, and I have seen them cure some painful cases of it.

To a school where I was teaching there once came a child of nine, with manner and face plainly stamped with artificial life, and for weeks her teachers despaired of ever seeing any genuine, simple feeling. The child did not for a moment lose a painful self-consciousness which did not forget to air her charms at the entrance of a visitor, or when she wore a new article of apparel, as she frequently did. The first time she was asked to make a bill of materials which she might buy—materials of any kind—simply to show how bills are written, her bill began :

To one pink satin ball-dress..... \$80,  
“ one pair white kid boots..... \$15,

and proceeded through eight or ten similar items of fancy and expensive dress. After our first vacation of one week this child returned with a glad, eager look on her face, and, going close to her teacher, said: “I am so glad school has begun again! There is nothing interesting going on at home.” From that day her manner gradually changed; she came to love the stones, flowers, and animals which we studied, and her face lost its blank, soulless look, and became sweet and gen-

tle. This change in expression was so marked as to be spoken of by a frequent visitor.

Materials for study in any department of natural science are so abundant that it seems almost unnecessary to touch upon this topic. The greater abundance of botanical and zoological material in summer invites to those studies at that season, while physical and chemical studies may quite as well receive attention in winter; but with care and a small outlay in money any of these studies may be pursued at any season. A window-garden, where a child may plant seeds at varying intervals and then pull them up and examine the whole plant at different stages of growth, is possible at any season; but this better be done in early spring, when the vegetation starting out-of-doors increases the interest of the child and supplements his work.

The preservation of materials and the formation of collections are important. Encourage the child's efforts in this direction. Let the boys and girls make shelves, boxes, or cabinets in which to keep the collections. A set of wood-working tools and ability to use them will be a useful adjunct to natural-science study.

Whatever a child collects should be received with a smile of encouragement, no matter how worthless it is, until he has gained some power of discrimination. Let a mother refrain from showing disgust or fear of any natural object—even of toads, spiders, and snakes—lest she foster in the child the common superstitions which attach harm to innocent creatures. And if the child brings a



handful of frogs' eggs, sticky and dripping, the mother better not say, "Now go away and throw those horrid, dirty things out; I will not have the house filled up with them," and proceed to chide him for soiling his clothes and dripping water on the carpet. Let her show the child she is pleased with what he has done; get a jar in which to put the eggs; call the child's attention to the tiny dark spot in each egg; awaken his interest by telling him how the eggs were deposited and why they are fastened together in such a gelatinous mass, and that if he keeps them and gives them fresh water a little animal may come out of each one. This will keep alive the spirit of investigation; and, after all this has been done, she may show the child how he might have kept from soiling his clothes and the carpet. A mother should never make fun of a child or laugh at his preferences, but try to enter into the child's thought and feeling, and, having done this, she may lead him to what she wishes. She should be patient, too; for, while the child's perceptions are often more keen and true than hers, he will find it hard to follow her reasoning processes and to see relations which are very simple to her. A mother should teach kindness by her own treatment of helpless creatures. Let her not crush the insect in the house, nor pull the weed from the garden with anger or impatience, but teach her child respect and kindness for all life until he has reached years when he can clearly distinguish between necessity and cruelty.

Be glad when questions are asked; hail them,



if they grow naturally from the lessons, as the dawn of a good day for the child. Never say, as many a mother (and, alas ! many a teacher) does, in answer to a child's question, "Oh, that is too hard for you ; you must wait until you are older." Is it surprising that children so treated lose courage and go through life thinking of every new difficulty, "Oh, that is too hard for me." There is a simple side to every subject ; and if a child comprehend not a tenth of what is said, he is helped and satisfied by the effort to treat him as an intelligent being. If the child cannot answer the mother's questions or his own, he should, if possible, be sent to Nature herself to find the answer, the mother giving only so much help as to direct his attention and insure his finding the answer within a reasonable time.

The child himself should handle the objects, manipulate the materials in experiments, make and record observations, and so learn to give accurate attention and to keep exact accounts of what is seen, to use his own hands and eyes, to do. He who can do as well as think is twice armed against poverty or misfortune.

Accidents may be turned to account, not only to teach how to avoid them, but the immutability of Nature's laws. The sooner a child finds that Nature never forgives a sin against her, the better for his health and happiness. I know one mother who has taught her child to see the relation between headaches and candy ; and so well he understands it that now, at ten years of age, he does not over-indulge, although the favorite sweets

stand always on the library-table within his reach.

Take advantage of any unusual phenomena. The last transit of Venus was a chance not again offered in the lives of ourselves or our children, and every one might have seen it through a piece of smoked glass. A recent railroad-cut exposed fine examples of ripple-marks, which will soon be buried from sight by falling earth. After some storms there are exceptional opportunities for lessons in physical geography and geology. Such chances are of more value than many things for which we put them aside.

The relation of natural-science studies to health and to the mental and moral culture of children has been suggested. Their industrial uses are familiar to all; so intimately are they connected with the life of man that knowledge of any branch makes one more capable in the conduct of his life. The relations between these studies and the great workshops of the world may with advantage be pointed out until the child feels the mighty pulse of the world's work and acknowledges his debt of service and brotherhood to all men. The habits of mind produced by continual contact with things, forces, phenomena, and laws promote clearness of insight and ability to look over a wide field, and to gather the facts necessary to form right conclusions. These are the habits which give success in business.

Another important advantage in the study of the natural sciences is found in their relation to invention. The emancipation of man from con-

tinuous manual toil is the prophecy which Science has already uttered; and she but waits the men to put her forces at work in the right ways to fulfil this prophecy. A child rightly started has before him the possibility of doing some of this needed work, and so adding to the sum of human knowledge and comfort. If he does not do this, he will have the understanding which will appreciate and encourage the labor of others; and if his pursuits early lead him quite away from the impetus to those studies which his mother may have given in childhood, still her labors will be rewarded by the increased enjoyment which touch with Nature adds to any life.

For mothers who have acquired little or no knowledge of natural science, it may be well to indicate some of the best sources of information and direction. For the most elementary works, Appletons' Science Primers and Ginn & Co.'s Guides to Science Teaching are among the best. For more advanced standard books, the works of Dana, Le Conte, and Geikie in geology, of Dana and Brush in mineralogy, of Gray and Bessey in botany, of Packard and Huxley in zoology, of Huxley and Martin in physiology, of Remsen in chemistry, of Meyer, Wright, and Ganot in physics, of Newcomb and Young in astronomy, are among the best.

Better than books are the collections of a well-arranged museum, if they are by good-fortune accessible. If possible, use them with the children, not for the amusement of an idle hour, but as teachers speaking more directly from Nature's

heart than books can do. Also better than books is contact with a living teacher, and association with others interested in the same work. Such help may be sought with assurance that one will seldom fail of kindly welcome and of all possible assistance. The Agassiz associations, whose president is Mr. Harlan H. Ballard, whose headquarters are at Pittsfield, Mass., will furnish any mother with the opportunity of putting herself in contact with workers in this field, and of getting invaluable aid and inspiration.

Thus far in this paper the benefit of the study of natural science to the child only has been considered. But what of the mother? Truly, what increases the well-being of the child must increase hers also; but is there no personal gain to her apart from her child? Will it be nothing to be introduced to Nature, and to become a welcome guest where one has been a comparative stranger? Will it be nothing to leave the artificial and conventional, where so many masks are worn, and make friends with Nature, who cares nothing about dress, income, or pedigree?

Few mothers have not felt the renewal of youth which comes when in the woods, on the mountain, by the shore; have not found their cares slipping insensibly from them when gazing into the depths of the sky, listening to the murmur of a brook, or inhaling the sweet breath of the summer wind. Let me assure these mothers that every step in the study of any natural science will open more wide the door through which Nature will pour such healing balm.

O mother, tired with housekeeping, give your family simple, uncooked fruit for dessert; let puddings and pies go unmade, and give the time so saved to the pursuit of enduring pleasures; finish the little dress with a few less ruffles, and fashion for your child's mind a garment which cannot fade or grow old; make fewer calls on your fashionable friends and more to the wood-lot, the open meadow, and the running brook; lay aside the latest novel, and go

“Read what is still unread  
In the manuscripts of God”;

do not stop to gossip about the newest scandal, your neighbor's new bonnet or forthcoming party, but pause and bend your ear in the quiet places where the secrets of all life are told.

You have many hinderances in fashion and conventionalities. Do you wish you could stop and live differently—live more simply; wish you could offer family and guest alike simple bread, vegetables, and fruit without the fuss of the many courses and interminable combinations which consume time and often ruin the digestions and tempers of those who partake of them; wish you could get a few simple, artistic patterns for your own and your children's garments, and use them year after year without all this harassing discussion of what is style and fashion; wish you need go to no large parties, or ever give any, but let the few chosen friends come when they desire and take you and your home life as they find them? Do you wish all these? Then prove the

desire by making them all true. But you answer, "I cannot unless everybody else does." 'Tis the old story of "foxes and tails." We actually follow the maxim, "Your conscience, not mine"; and forever is asked, not, Is it right? but, What will they think?

Why not make these radical changes? Every step of progress was once a difference which some brave spirit bore alone. Instead of fearing to be different, one may be proud and thankful to have found a better way to live: "The great world will come round to you."

## Part IV

### SUGGESTIONS ABOUT THE ATMOSPHERE OF SCHOOL-ROOMS





## “ART FOR ART’S SAKE”

To learn for the pure love of knowing; to do for delight in activity; to make beauty for beauty’s sake—this is the natural state of all children; and most children would continue in that state if they could be removed from an atmosphere that seethes with effort to make money at any risks; and some would remain in that state longer than they do if not so often told that their activities are useless.

To do from spontaneous choice, without reference to use or reward; to do because doing is delight—here all children begin; but when pushed or drawn from this path few return, and those few after long wanderings in the miry ways of doing for use and gain.

Not that use and gain are illegitimate, but that both use and gain are most highly served where they are not the chief end, or are altogether out of account. It is not labor *per se*, but the motive for labor, that is applauded or despised. Indolent natures may need a spur, but circumstances usually provide all that a man can bear; and it is doubtful if any man has ever been benefited by the possession of a conscience morbid on the subject of use.

New England puritanism gave such a conscience to our country, and some of the reckless demoralization and extravagant waste of this generation is doubtless Nature's reaction on that conscience. What is desired to point out here is that this conscience, in theory at least, survives in church and school, and in one way and another is forced upon the children of this day.

And market value, or ability to take the place of something that is marketable, is made the criterion of use, so that a child grows to feel that until he can make or be what will sell he is of no account. He is educated in order to sell himself or his products to the highest bidder in the world's markets.

The result of this is that in the average nature all the movements of being that are not in accord with this marketable current are stifled. A few exceptionally strong natures refuse to be so engulfed, and strike out new channels only to be made use of to force into some new turn of the marketable stream those who come after them.

To delicate, shrinking natures this is suicidal to their finer possibilities, and to all natures a baneful, warping influence.

No teacher can hope to counteract or to annul to any great extent the home and social influences of his pupils. He can create a different atmosphere at school, and whatever recuperative power there is in that atmosphere for the nature of childhood will bear its due effect during the time which the child remains in it. This is too limited to allow hope of great changes in the natures of pupils

save under teachers with exceptional native endowments. Probably the average teacher carries into his school-room no new or different atmosphere; he is himself the product of the marketable current.

But there are parents and teachers who, though themselves such products, have thoughts of better things, and would be glad to give their children and pupils something better than they have experienced.

For these it may be possible to take the title of this chapter as the spirit of the atmosphere which they wish to create; to provide opportunities for all forms of activity, and to encourage activity for its own sake; to give as much time as possible to labors that are not and cannot—at least, for some years—become marketable; to keep away all sorts of rewards that in themselves have a money value, and to never pay nor hire a child to do reasonable services for himself or for others. These are some of the ways by which the marketable tendency may be checked.

The noblest acts which history has recorded have been done without consciousness of reward, often with consciousness of disaster to self as a probable or certain result; and in one’s own individual life the high-water mark of excellence is most often reached when gain, use, and self are lost sight of. Self, as doer, is always intrusive; self, as receiver of reward in money, praise, or happiness, is a demoralizing element from whose presence the nobler parts of man’s nature flee away.

There has never been a time in recorded history

when to labor for gain merely was not a reproach in the eyes of the nobler classes, and probably there are few such laborers who have not at some time felt degraded by it.

A universal feeling of this sort has meaning. Unfortunately, the feeling has been allowed to extend to labor itself, probably because so few can afford to labor with no thought of self or rewards in view; but this consideration obscures the question. The generous-minded man delights in services that cannot be paid for, and feels humiliated by all unwilling services that necessity forces from him, and by being forced to take pay for willing service.

This universal feeling can be neither childish nor unreasonable, and its undying presence, in the secret recesses of our minds, is a perpetual criticism on a commercial and social condition that makes man the slave of rewards and of necessity for self-sustenance. Man holds himself within as free, having choice of when and how he shall toil, while outwardly he is slave only—bending his back, moving his limbs, and regulating his speech and even his affections according to the dictates of circumstance, his master.

The faith of the lily and the sparrow may be impossible to this generation; but if children could be kept from all consciousness of rewards while their capacities for the various activities were developed to the point of skill, particularly in the lines of greatest aptitude, there might be more men for whose labors returns were so generous that self-sustenance is easily lost sight of, and labor for its own sake remains the ruling motive. Still we

like not to think that the slow and the stupid cannot have the same chance, and that smartness must be at such premium.

Spontaneous labor for its own sake is to a man what play is to a child. The adult’s conception of play is by no means the child’s conception. To a child play is labor—is the focusing of all his powers in a buoyant, exuberant, happy activity. He learns the play laboriously, detail by detail, conscious of his awkwardness and inefficiency. When it is learned he delights in its repetition until it has become so easy that it no longer stimulates to effort. Effort constitutes the chief charm—to feel power and to use it, until it becomes what play is to an adult, is what makes the thing delightful to the child. After that, repetition is stultification until he has had time to partially forget.

So of a man: that act in which all power is focused in a real enthusiasm expresses the man’s self, and for that act he refuses pay until his inner nature has sunk to the level at which he bends his self-respect to his needs.

It has been said that art arises in such moods only, when the being of man, freed from sordid cares, is focused to a high level of spontaneous movement. Could children be kept from greed of gain perhaps a new art movement would arise.

Also, one occupation, unless it involve varied and frequent change of activity, sinks a man to the level of a slave. He is then no nobler in his labors than a machine. If gain must be thought of, let there be as many channels of it as possible; that is, never turn a child out with one skill only; not

that if market demands in one fail he may turn to another, but that in all states of market demands he may have variety of activities and interests.

Concentration of life on one activity usually produces mediocrity only. Those who have been the instruments of the world's advance in science, in letters, and in moral purpose have usually been men and women of varied attainments; so much so that if the one thing for which each is most remembered were taken away the person would still be eminent in some other field.

There is a sense in which use is the last and the only criterion of excellence, and the phrase "Art for art's sake" becomes foolishness. The individual consciousness drops what is not used, and the art of forgetting is as valuable as the art of remembering; so the general consciousness refuses to carry useless impedimenta, and forgets the person whose labor does not become essential to some man's welfare. There is an after-delight in all fruitful activity—that of having produced something relatively permanent—and no healthy nature can long emancipate itself from the desire and the hope of being useful.

If all are parts of one whole and are moved by one intelligence, spontaneous, joyous activities would naturally take the line of use. If, then, a child were educated so that the bent of his innermost nature should freely flow in his labors, those labors would be all-sufficing for his sustenance and a reasonable social position, as well as useful to his fellow-men, without his being the slave of a morbid self-consciousness about deserts and gain.

## II

### METHOD

IN this age method is carried to extremes. That man who can only tell what he does, but not exactly how nor why, is not of much account. Yet the finest acts are never methodical, never according to rule; and this is part of their charm—that the element which lifts the act above ordinary occurrences of the same kind is mysterious and incommunicable. When the secret is found out, and the ordinary man repeats the process according to exact formulæ, the result has not the same charm. In the process of formulation the act has lost a volatile essence—the personal equation of the first actor.

Men say of such acts that they are inspirations of genius. But what is an inspiration of genius but the unconscious act of a man who is superior to the limitations of method?

Method is the master of the fearful and the feeble-minded, but to the strong it is a tool only, and no teacher should forget this fact. We have had “Pestalozzianism,” “Objective Teaching,” “The New Education,” and other phrases to designate a method or methods guaranteed to turn out a superior sort of youth, and perhaps the

reader has thought that this book is designed to inculcate a new method. May the gods preserve the book from such a fate! Not method, but matter; not how, but what; not quantity, but quality, is its aim.

There are many ways of producing results, and when a teacher ensnares his personal equation—the spontaneous movement of his own judgment and common-sense—in the meshes of a method his school-room becomes no longer a free place.

This does not mean that he should have no plans, no system, but that he should feel free to vary or reject all plans and all systems. The “new” psychology begins to talk about what it will do for education—begins to give directions about physical exercises which will produce certain definite intellectual and moral results. That virtue can be taught is an idea as old as Plato, but be wary of that man who has an infallible recipe for the details of the process.

A quick intelligence, the saving salt of common-sense, a touch of humor, a trifle of courage, and an inexhaustible power of loving—these are the indispensable qualities of a good teacher; and with these a teacher may dare to handle all methods which have ever been known or used by mankind for the education of youth, sure that each will prove useful in some degree.

If a teacher chooses to divide the mind up into compartments, to label each, and then to devise special exercises for each, he may do the child inestimable good, provided that he hits upon the right exercise for the right child; and if he does



not, he should, by use of the qualities mentioned, find out the fact before the child has received any injury.

The child is not so tender a plant, neither is his time always so valuable, that it will hurt him to learn the alphabet or the multiplication table in the ways of our grandfathers; but it will hurt him—it may be irretrievably—to spend several hours a day, five days per week, in the presence of a teacher whose methods are immovably fixed, however good they are.

Variety is essential to health of mind and morals as well as of body. Sameness produces nausea in one case quite as soon as in the other. A mountain may be climbed a dozen times with almost equal zest, provided that a new path is taken each time; and it is the new path, as well as the new mountain, that childhood, as well as manhood, perpetually craves.

The what is of first importance: that decided, as to quality and amount, the how becomes important; and let it be said here that no “how” is infallible or equally useful in all cases.

It has been said that it does not matter what you teach a child, provided that the best method is used; for method makes power, cultivates and trains faculties, and leaves its impress in habits; and that right habits are the only valuable result of learning. It might as well be said that it matters not what one eats, provided that he eats it daintily, with due regard to good form.

Activity is not nourishment, and to bring about nervous and muscular connections by exercise of

parts, when there is left no indelible impress of anything more than the activity, is about as useless as to make a net-work of roads in a desert country where there are no inhabitants.

Get the inhabitants first, be sure of their quality and permanence, and the roads will follow, whether any method is used or not. Better winding cow-paths between worthy settlers than no settlers and the straightest roads in Christendom.

### III

#### THE SCHOOL AS ENVIRONMENT

AMERICAN children have sensitive organizations, and all children easily take on the impression of their surroundings. Every object and phenomenon is a stimulus to which the child's nature reacts, consciously or unconsciously, with more or less power; and any stimulus frequently repeated leaves an impression in the child's organization which is presumably indelible.

Science tells us that from birth to the age of twelve the brain undergoes its maximum of expansion, and that what cells shall expand and what remain abortive, and the extent and quality—that is, the nature—of the expansion in any given cell must depend on the time, quality, and frequency of the stimuli that reach the child. During this period connections between cells are begun, and this process goes on presumably through life.

If this be true, it may reasonably be inferred that the ground-plan of a given child's possibilities is determined before the age of twelve. If no expansions of cells take place after that age, or very slight expansions, the limits within which that mind shall work are fixed. It is presumable, also,

that no opportunity later in life can extend those limits, or do more than set up such connections and co-ordinations of activity as are possible within them.

If there be such limits and so early fixed, it behooves every educator to take the fact into serious consideration, in order that the child's environment before the age of twelve shall be favorable to a general, symmetrical, and desirable expansion.

Science has so far located brain areas which correspond to activities in the various members and organs of the body as to give some direction to the physical exercises which aid expansion in those areas; but as a healthy child spontaneously uses all members and organs while kept happy and supplied with incentives to movement, so much of brain expansion might, under favorable conditions, be left to nature's own demands and instincts in the child.

It would be pleasant to think that nature is no less capable to expand all brain areas, those still unknown—that is, unmapped—by science, as well as the known, and that man has only to provide a healthy, happy mental environment, and the child's own instincts would do the rest. This is probably true; but what constitutes a healthy, happy mental environment is harder to determine than a physical environment of such qualities as apparently affects the physical life only.

The physical life is a door to the mental life; and whether or not each material thing has an immaterial essence which affects the soul of man, each physical stimulus leaves a mental impres-

sion, and the total physical environment is the most tangible cause of a given mental result.

These facts, if they be facts—and they certainly have some basis in scientific investigation—make the physical surroundings of a child before the age of twelve of more importance than is generally conceded.

Have the slums of a great city ever produced a genius or even a very capable man? Many a fine nature has been bred in poverty, but it has been poverty in the country or a small town where nature's riches made up to the child for the lack of such opportunity as money provides. It is an interesting fact that Lincoln, about whose poor beginning so much has been said, never knew the humiliations of inferiority during his formative period. A splendid constitution made his physical privations easy. His neighbors were as poor as himself; he had all nature, and was the master and not the slave of his environment and circumstances.

The country school-house may not be an important factor in a child's environment, although the lovelier the surroundings, the more tasteful the building and its furnishings, the better; but the city school-house is one of the chief elements of beauty or ugliness in the child's life. To many a city child the school-room is the only opportunity to dwell in familiar intercourse with a fine interior. Home and streets are hopelessly sordid and vulgar, and for such the school-room is the only avenue for nobler stimuli.

“Unto every one that hath shall be given; but

from him that hath not, even that which he hath shall be taken away," seems peculiarly true in education, as though to have were a magnet of irresistible force. The noblest buildings and the loveliest interiors which a city can afford to build are generally put in the best residence portions, where the home life equals or surpasses the school life. Why not reverse this process, and trust the same law of attraction to do for one child through the home and for the other through the school if the school-rooms cannot be made equally beautiful in all parts of the city?

Noble proportions, delicate, pure, harmonious colorings, plenty of light, abundance of fresh air and of heat, scrupulous cleanliness and order, hygienic seats and desks, and a general impression of artistic arrangement—these are essential. A general impression of loftiness, beauty, and comfort is of greater value than any isolated, small details of beauty can be.

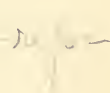
Plants in windows and pictures on walls are not necessarily desirable. If plants interfere with the proper ventilation of the room, any æsthetic or scientific good which the children may derive, or be supposed to derive, from them is more than counterbalanced by the stupefying, deadly effects of the vitiated air.

Small photographs from paintings of the old masters, if hung so that they are above the children's heads when seated, and on wall spaces so huge in comparison that they are mere blotches on it, produce an effect the reverse of what is intended. This is not meant to discourage the use

of plants and pictures, but to show the futility of some æsthetic efforts that are made.

A picture to produce an appreciable proper effect as an artistic stimulus should be so large and so placed that its details are easily seen by the child when seated in any part of the room, and should harmonize with the proportions and furnishings of the room.

Small pictures may be kept in drawers where children can look them over; and the more of a good sort there are, and the more freely children are allowed to handle them on rainy-day recesses, the better; but they should not be hung where they produce scrappy, untidy, or inelegant effects.

How much more true is this of the tinsel so often seen in school-rooms! The writer has visited kindergartens—even those drawing patronage from the most cultivated families—where the amount of tawdy, ill-arranged decoration was enough to disgust a sensitive adult. (When will— parents learn that because a child is a child anything is not good enough for it, and that to subject its delicate, plastic, so easily impressed organization to frequent stimuli from sights or sounds that would irritate a refined adult is criminal, for it is nothing less than the vulgarizing of the child's nature?

The æsthetic limits of a child's nature are largely determined by what his environment gives of artistic expansion before the age of twelve. Think of it, parents, who give your children coarsely colored, rudely formed toys and send them to school-rooms which you would not be willing to be re-

sponsible for as an expression of your own tastes and natures! Think of it, teachers, whose own limits have been fixed, who vainly beat at the bars of those limits trying to realize what to another is so easy—limits, perhaps, made by the very misfortunes which you now surround the child with in decorations over which you have some control!

The æsthetic element permeates the whole man; is a sort of spice that determines the flavor of all that he does and thinks so long as he lives.

The child who lives in the country, who dances with bare feet on the tender spring turf, wades in brooks, climbs trees, welcomes the birds and flowers and knows their haunts, who plays or works all day long within sight and sound of the ever-changing beauty of sky and earth, from winter to summer and summer to winter—this child has a chance to gain and to keep the power to respond to the highest in art, literature, and morals, such a chance as a child of the same social level in the city does not have.

The city child whose dwelling is far from parks, whose playground is the streets, and whose house is of the sort which poverty necessitates in cities—this child has little to stimulate that finer element; and whatever spice he does get for the seasoning of his nature is usually of a poor quality. For these children—and they are thousands—the only refuge which can be supplied at present is the school-room; and surely something more can be done than yet has been.

(The teacher is himself a part of the child's en-



vironment. Positive ugliness and a conspicuous deformity should be disqualifications for any school-room below a college, and for children under twelve something more than negative points should be required.

A teacher with a large mouth which was rarely closed, and an ugly protrusion of the upper jaw which brought large, ill-shaped teeth conspicuously into view, was selected by a college professor and put in charge of a kindergarten for children of well-to-do people. This woman's smile was disagreeable, and her mouth at all times unpleasant to look at. Does any one suppose that children from three to five years old could look at that mouth for several hours each day, five days a week, through nine months of the year, without hurtful impressions from its distortions?

Not alone the figure but the care of the person and dress should be taken into account. Cleanliness first of all, daily cleanliness of person and dress; and then delicacy of texture and color and simple grace in outline should be the conspicuous features of the dress.

The breath also is important. A dirty breath is as much out of place as a dirty face, and the teacher who does not watch the quality of the one as much as the cleanliness of the other has not yet quite realized what good manners are.

Each child in a school helps form the environment of every other, and the parent who lets his own child go unkempt hurts the natures of all other children with whom his child comes in contact. It ought to be possible for school boards

and teachers to regulate the cleanliness of person and clothing of every child whose parents are negligent in this matter. A bath-room and an attendant for it, a wash-room and a laundress, and some extra suits of clothing to be loaned to the children, with bill for such services sent to all parents who were able to pay them—these would soon cure some of the worst evils of this sort; and few cleanly people realize the nature or the extent of the uncleanness in the persons and clothing of the vast majority of children in city school-rooms, particularly during the colder months.

These are the tangible elements of the school as environment, the elements which may be directly controlled.

The intangible elements are the already determined nature of the teacher and the plastic, forming natures of the children; and the tangible elements are as nothing to these intangible ones when the latter are powerful.

A negative, indifferent, commonplace teacher does no special harm nor good; and under the care of such the tangible elements and the studies are all-powerful for good or ill, according to their quality and the way the teacher happens to use them. The teacher is, then, a mere channel through which the studies flow and the various other elements of the school as environment are ordered or disordered.

On the other hand, a teacher sometimes has a self so individual, original, and strong that it dominates any sort of environment that is within the range of its own limitations. When evil, this

teacher does incalculable harm ; when good, inestimable good.

Most teachers are neither the one sort nor the other, and must be thought of as having personal equations that are influential but not all-powerful. Most adults on looking back can classify their teachers according to this element of personal power, and estimate the good or ill effects of it on their own natures. If sensible of it after the lapse of years, how much more so in childhood when it was a daily, living reality, making or marring the beauty and the glory of life.

Mothers should take this matter to heart. Some of them are sensitive and intuitive enough to determine the possible ill or good effects of a given teacher merely by being a short time in that teacher's presence ; and they—the mothers—should try to regulate the appointment of all teachers of children under twelve years of age.

The writer sometimes wonders if ever the time will come when those first twelve years—those years of so great possibilities and so great results to the whole after-life—will be deemed too precious to intrust to servants and mediocre young men and women and given over to the wisest and the loveliest of our race, and when nurseries and school-rooms will be as carefully proportioned and decorated as the best parlors and public assembly-rooms for adults now are. In view of the interest at stake, this seems little to ask, and yet its realization looks like a far-off, Utopian dream.

## MIRTH IN THE SCHOOL-ROOM

THE moral atmosphere of school-rooms is often too grave. The teacher takes himself, his occupation, and his pupils too seriously. A spirit of mirth—not of levity, nor of triviality, but of that mirth which is the natural expression of a healthy, happy nature—this should be latent in all school-rooms, ready to break loose and sweep children and teachers temporarily off their feet on any legitimate occasion.

A really merry face is rare, even among children—not, it is to be hoped, from lack of native capacity to be merry, but from the strenuousness of life and the sordidness of thought about money and social position which children are allowed to share, even in well-to-do families, and forced to consider and serve among the less well-to-do.

It is not labor nor the sharing in the thoughts and plans of parents which ages a child's face—save in extreme poverty, where there are real privations to be endured—but the motives for the labors and plans and the artificial forcing which makes a child conscious of what he would otherwise long remain unconscious of.

A teacher cannot change these conditions in the

home nor in the social life of the child, nor hope to materially undo or annul their effects; but if his own heart has not become sordid or soured by the sordidness of others, he can make an atmosphere in his school-room in which the natural, care-free, merry state still possible to the child shall unfold, expand, and drive out for the time the other influences. This will give an opportunity for the better side of the child to grow.

To be free, to be his real, innermost self is what a child needs, and what, alas! many an adult craves with a hopeless, aching heart.

The capacity to be merry needs development and training like any other capacity, and just as the human voice needs training in speech and song, so does it in laughter. A clear, ringing, delicate, merry laugh is so good to hear that it is quite worth while to teach it to a child; so that when his heart is merry and occasions arise he may express his mirth easily and gracefully, with charm to himself and to others.

Laughing exercises of the right sort are wholesome to the whole being of the child. They expand the lungs, deepen and sweeten the voice, give control of the breath, and quicken the circulation; and, while doing these services for the body, they gladden the heart, because a child cannot join in a laughing exercise without reaching the point of natural laughter; and not until that point is reached and the natural laughter regulated and controlled does the exercise reach its highest value.

Laughter is sometimes repressed as bad form, as

though an expression of mirth in laughter were not as natural as joy in song.

But mirth must not always be artificial in its beginning in the school-room, although such exercises will do to train the voice and to form a habit of delicate, graceful, toneful laughter. The teacher must seek and must make occasions for spontaneous mirth, and in so doing cultivate and refine the sources of mirth in the child.

Stories that are funny without being cruel or indelicate, humorous occasions about town, episodes among the children themselves—these should be used to train the child to a discriminative sense of humor that is without malice; and to see the humor of his own conduct or condition quite as simply as he sees that in another's, and to take the laugh on himself as gayly as he shares in it on another's account.

Aside from occasions for mirth and from exercises for the refining of mirth's expression, a general atmosphere of all-pervading cheeriness should be in every school-room, casting its happy halo around the head of every child. It is the teacher alone who can create and preserve this atmosphere, and this only by being really, truly, merry-hearted at all times. This is wellnigh impossible to some adults, at times difficult to all; but it pays, in the long run, as nothing else does for a teacher to cultivate this spirit. It is a preservative of health of body and sanity of mind for both himself and his pupils.

## CONCLUSION

A HUMAN educational experiment station does not exist. The average school-room is like the average farm. The farmer follows the ways of his fathers, slowly and uncertainly takes on new ways; and at the first signs of apparent failure of a new way reverts at once to the old. So the teacher timidly takes to new subject-matter or new methods, and tends to revert to the educational ways of his childhood.

In education this is partly due to the fact that there is no considerable body of ascertained, authoritative, scientific fact about education. The scientific expert has not yet adequately treated the child. In many places statistics are being gathered about certain mental phenomena of childhood; but these are of no more value in education than similar statistics about farming would be to agriculture.

The crude, undefined, uncertain notions of the average farmer about soils, plants, fertilizers, insect pests, etc., are of little value save to emphasize human ignorance and the incapacity of the average man to reason or to experiment rationally or to give an intelligible and reasonable account of the faith that is in him about agriculture.

So the average child's account of his tastes, notions, mental processes, ideas, etc., by any process of questioning, may reveal what is self-conscious in the child, or can be made so by a question; but it tells next to nothing about the unconscious side of child life or about the capacity of the child to have had a different self-consciousness.

Science perpetually asks the limits of capacity to change in a living thing; that is, the sum total of capacity with which nature has endowed that form of life, and seeks answer not alone nor chiefly by observation of what *is*, but by experiment of what *may be*. To bring to bear a totally new and different set of stimuli on a living thing is to learn the capacity of response in that thing to those stimuli, and there is no other way of finding out. Moreover, the different set of stimuli may have to be presented gradually by many intervening and carefully graded steps to bring out the full capacities of that living thing in the direction of those stimuli.

So with the child. What he is to-day is no sure measure of what he may be to-morrow. The mental and moral content of his consciousness under present conditions of home and school environment do not tell his capacity to have a different content, and science knows no way of determining capacity for different content, nor the extent in quantity and quality of it save by experimentation.



IF a man would speak with force he must speak as though he knew; and all the while he may be conscious that he knows nothing, and that his best thinking is little more than a groping about in the dark. So feels the author in closing this book.



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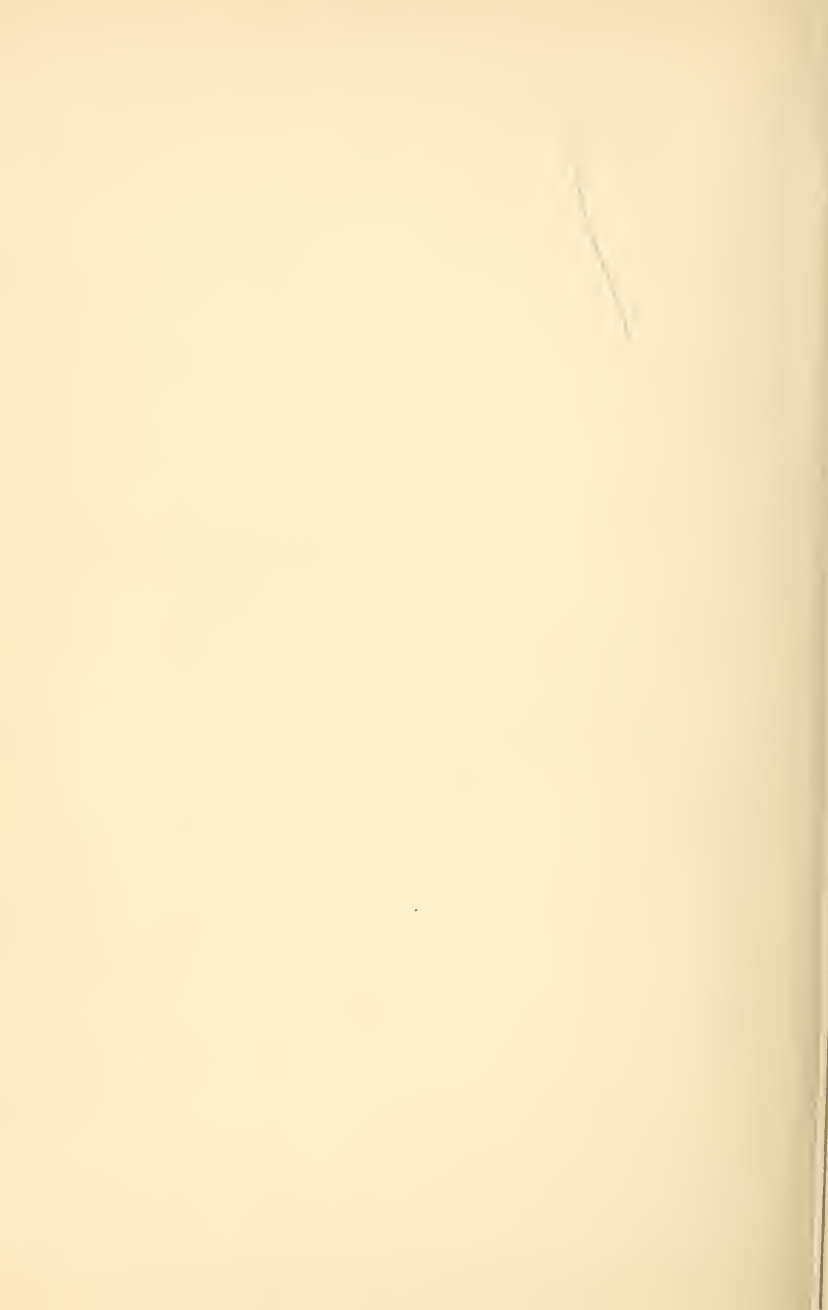
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